SAFETY MAINTENANCE & PRODUCTION

FORMERLY SAFETY ENGINEERING

AMERICA'S PIONEER MAGAZINE IN ITS FIELD

EST. 1901

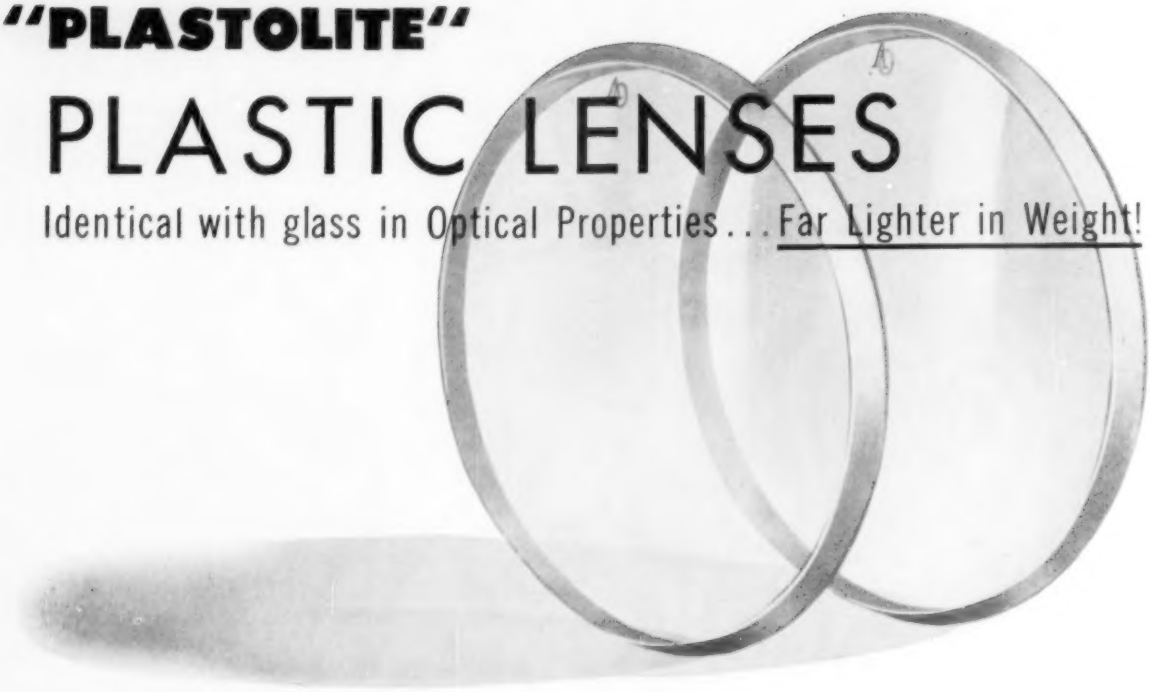
FEBRUARY, 1952
FIFTY CENTS

AO Announces

"PLASTOLITE"

PLASTIC LENSES

Identical with glass in Optical Properties... Far Lighter in Weight!



HERE IT IS...

the quality eye protection in plastic lenses many safety directors have wanted . . . the answer for workers who need protection but demand lightness heretofore unobtainable . . . the answer for companies who seek the enthusiastic cooperation of all exposed employees in cutting the high costs of eye accidents.

Made in the World's Cleanest Rooms!

Interested in plastic for years, AO has conducted constant research both in the protective properties of this material and in the atmosphere, facilities and controls required to assure maximum quality in the manufacturing process. In a new safety plant section at Brattleboro, Vermont, where Plastolite plastic lenses are made, all foreign matter is excluded which might impair the quality. Not only are the premises dust-free, lint-free and air conditioned—the workers wear special clothing! What's more, AO Plastolite lenses undergo a multitude of tests and inspections. Result: lenses with the optical properties traditional with AO that conform to the highest known standards!

RECOMMENDED USES:

For workers exposed for long periods . . . women workers . . . supervisors, foremen, plant visitors. Especially desirable for electronics work and spot welding. AO Plastolite lenses provide excellent protection against impact particularly where flying particles are small and acid exposures are no problem. NOTE THE LIGHT WEIGHT OF THESE LENSES *IN YOUR HANDS* AND *OVER YOUR EYES!*

AVAILABLE ON YOUR FAVORITE AO GOGGLE

AO Plastolite lenses are available as 6 curve lenses in all eye sizes on your favorite AO safety goggle. Your nearest AO Safety Products Representative can supply you with this outstanding advance in eye protection.

AO's Industrial Vision Program
Increases Production, Decreases Accidents.
Write today for booklet "Improved Industrial Vision."

American Optical
SAFETY PRODUCTS DIVISION

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

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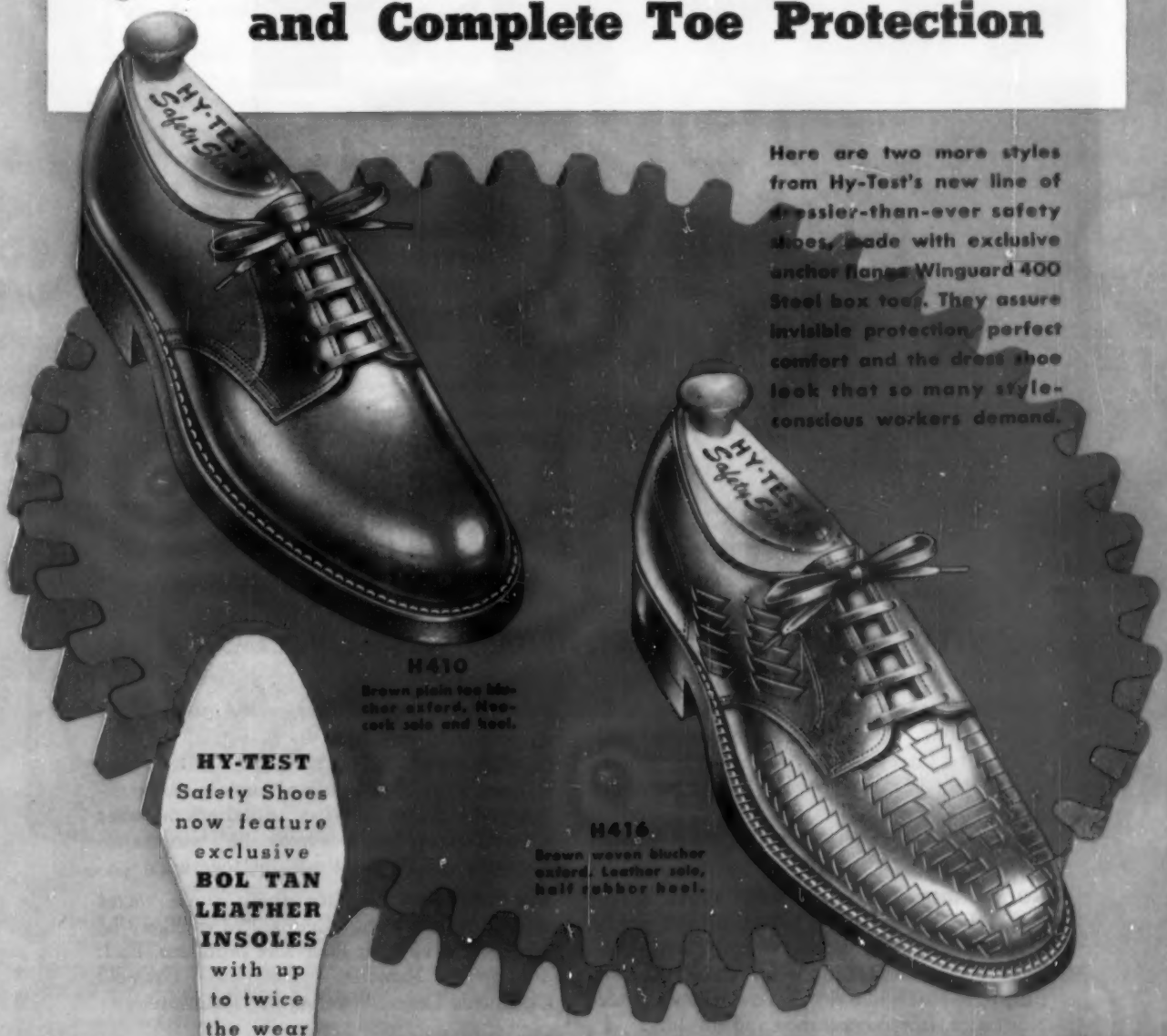
2 MORE HY-TEST ANCHOR FLANGE* WINGUARD 400's

for Dress Shoe Smartness and Complete Toe Protection



Here are two more styles from Hy-Test's new line of dressier-than-ever safety shoes, made with exclusive anchor flange Winguard 400 Steel box toes. They assure invisible protection, perfect comfort and the dress shoe look that so many style-conscious workers demand.

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Brown plain toe blucher oxford. Neo-cork sole and heel.

H416
Brown woven blucher oxford. Leather sole, half rubber heel.

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HY-TEST ANCHOR FLANGE* SAFETY SHOES

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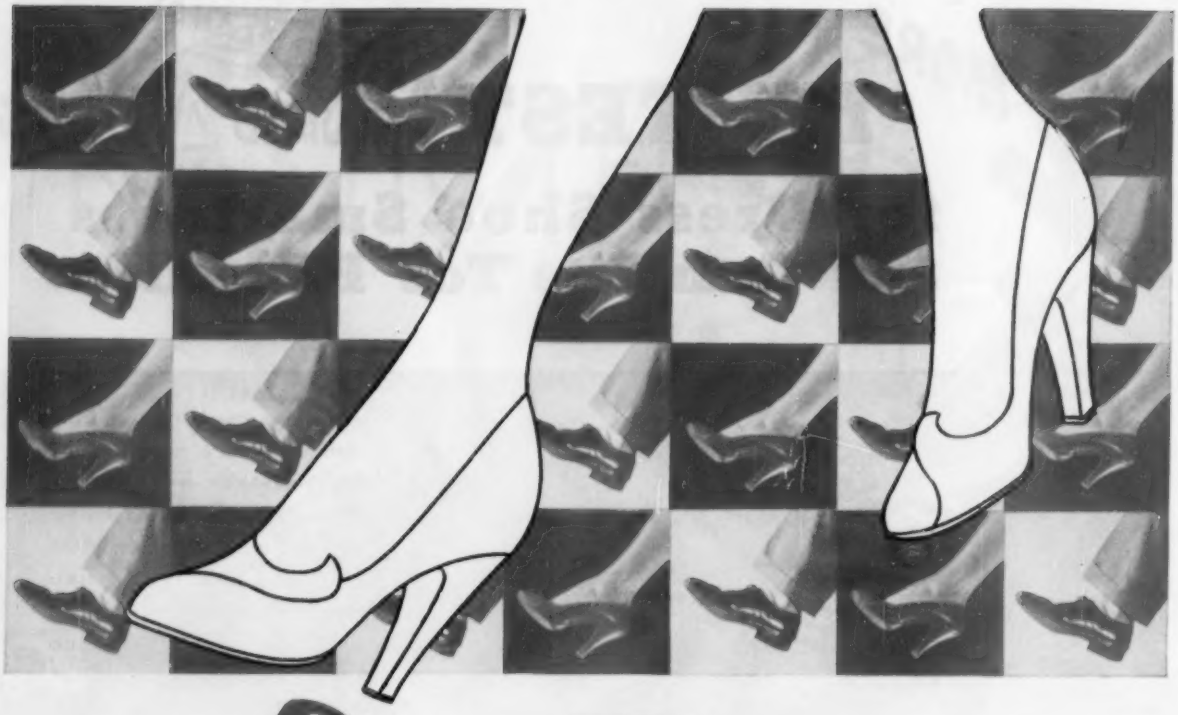
HY-TEST SAFETY SHOES



Safer Footing

WITH WAXES CONTAINING ANTI-SLIP LUDOX®

WALKERS GET ADDED ANTI-SLIP SECURITY on waxed floors . . . when waxes are modified with Du Pont "Ludox." That's because hard, tiny particles of "Ludox" colloidal silica surround softer wax particles . . . press into them when stepped upon and help keep the foot from slipping.

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MANY SAFETY AND SANITATION ENGINEERS specify properly formulated waxes containing "Ludox." A variety of formulations are available to meet specialized needs of institutions, business and industry. And new anti-slip floor waxes are continually being developed by wax manufacturers and Du Pont working together.

ASK YOUR WAX SUPPLIER about these waxes containing Du Pont "Ludox." Most likely he can help solve your floor-wax problems. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington, Delaware.

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The kind of air a man works in has a lot to do with how much work he can turn out.

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COPPUS

BLUE RIBBON BLOWERS

THE BLOWERS THAT PUT MORE MINUTES IN EVERY MAN-HOUR

CABLE MANHOLE AND TANK VENTILATORS — BOILER MANHOLE BLOWERS AND EXHAUSTERS — HEAT KILLERS — SHIPHOLD VENTILATORS . . . DESIGNED FOR YOUR INDUSTRY — ENGINEERED FOR YOU

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- ☐ on steam-heated rubber processes.
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- ☐ general man cooling.
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- ☐ drying of walls, sheets, etc., after treated with coating material.

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COMPANY .....

ADDRESS .....

CITY .....

(Write here any special ventilating problem you may have.)

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THE SAFE, LOW COST GOGGLE FOR ALL IMPACT HAZARDS

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No. 2200—All crystal clear — wide angle vision — No blind spots.

No. 2210—Clear lens — Green sides — Reduces glare from top and sides.

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THE BEST PREVIOUS RECORD WAS 142 DAYS
DO YOUR PART HELP MAKE A NEW RECORD
993-L
FIRE USE ONLY HANDS OFF
931
FIRE EXTINGUISHER HERE
972
PRIVATE PROPERTY NO TRESPASSING
18007
VISITORS WELCOME APPLY AT OFFICE FOR PASS
18110
UNIVERSAL SAFETY
THIS DEPARTMENT HAS WORKED 123 DAYS WITHOUT A LOST TIME ACCIDENT
ACCIDENTS ARE AVOIDABLE
992-U.S.
— PLEASE — DRIVE SLOW
17266
Think!
KILL EM BEFORE YOU THROW THEM AWAY
953-D
A WINNER NEVER KNOCKS AND A KNOCKER NEVER WINS
942-F
PLEASE TURN OFF LIGHTS
961-A
IF YOU ARE A SELF STARTER THE BOSS WONT HAVE TO BE A CRANK
944-F
WARNING
DO NOT THROW LIGHTED MATCHES CIGARS OR CIGARETTES ON GROUND
PUT OUT CAMP FIRES BEFORE LEAVING
3501-UP
PLEASE THOROUGHLY CLEAN AND DRAIN EACH WASH BOWL AFTER USING
963-E
NO SMOKING
971-A
SHUT DOWN THIS MACHINE BEFORE CLEANING OILING OR REPAIRING
WAIT UNTIL ALL MOVING PARTS STOP
938-R
PLEASE WIPE YOUR FEET BEFORE ENTERING THIS BUILDING
941
NOTICE TO FOREMEN
CARELESSNESS IS DANGEROUS
IF WORKMEN INSIST ON BEING CARELESS DISCHARGE THEM.
909
ALL WIRES DANGEROUS
WIRES MUST ONLY BE HANDLED BY THOSE WHOSE DUTIES REQUIRE THEM TO DO SO
913
SAFE TO USE ON ELECTRICAL — FIRES —
990-X
FIRST AID KIT
977
MAKE ALL DELIVERIES IN THE REAR
18066
— NO — SMOKING ALLOWED
989-C
EXIT
17272
NO SMOKING
ALLOWED IN THIS BUILDING AT ANY TIME
CARRYING LIGHTED CIGARS PIPES OR CIGARETTES STRICTLY FORBIDDEN
951-D
SAFETY FIRST BE CAREFUL SAFETY FIRST
700
NOTICE TO THOSE SEEKING EMPLOYMENT
UNLESS YOU ARE WILLING TO BE CAREFUL TO AVOID INJURY TO YOURSELF AND FELLOW WORKERS DO NOT ASK FOR EMPLOYMENT HERE
WE DO NOT WANT CARELESS EMPLOYEES
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NO SMOKING
907
POSITIVELY NO SMOKING
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FORMERLY "SAFETY ENGINEERING"

The Magazine of Safety

A MONTHLY PUBLICATION DEDICATED TO ACCIDENT PREVENTION, MAINTENANCE, HEALTH CONSERVATION AND FIRE CONTROL FOR EFFICIENT PRODUCTION.
EST. 1901

VOL. 103, NO. 2 FEBRUARY, 1952

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AMERICA'S PIONEER MAGAZINE IN ITS FIELD

SAFETY MAINTENANCE & PRODUCTION is indexed regularly by Engineering Index, Inc., New York

another Lehigh first!

the "sock-saver"

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has been granted a construction patent and is now

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- insulates against heat or cold
- can't rub or chafe toes

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ALLENTOWN, PA.

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It's Safe to Say

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★ TISSUE OF LIES

YOU haven't heard anything yet! If we thought that the late Herr Goebbels invented the Big Lie with which to delude his people and drive them into an anti-American frenzy, we now know that the head of the Nazi propaganda machine was a rank amateur.

Comes now a blast from the Communists to the effect that we are sacrificing our industrial workers right and left in our ruthless determination to build up armaments with which to slaughter the peace-loving (?) governments whose strings are pulled by Moscow's puppeteers.

Recently, this government was host to a group of French industrialists and safety officials who made a nationwide survey of our industrial production and accident prevention procedures. True to form, the Communist controlled press and its followers in France have come forward with the accusation that in our speed-up orgy, we are killing off our industrial workmen like flies. It seems that we have so sped up our industrial output that our workers must report to their daily jobs in mortal fear for their lives and that our industrial fatalities and injuries are a national scandal!

This is just a slight variation of a threadbare theme. Even Wall Street gets dragged in. The tools of that financial canyon naturally are heartless exploiters of the "underprivileged" working classes, most of whom are so pitifully underprivileged that they don't know where their next television set or electric dish-washer will come from; they are so relentlessly exploited that they can hardly find parking space for their late-model automobiles.

About the only way our working people are downtrodden is through a maze of taxation made necessary to pay for the rumpus stirred up by Iron Curtain countries. To borrow a phrase from the Army, even the Communists in our midst "never had it so good."

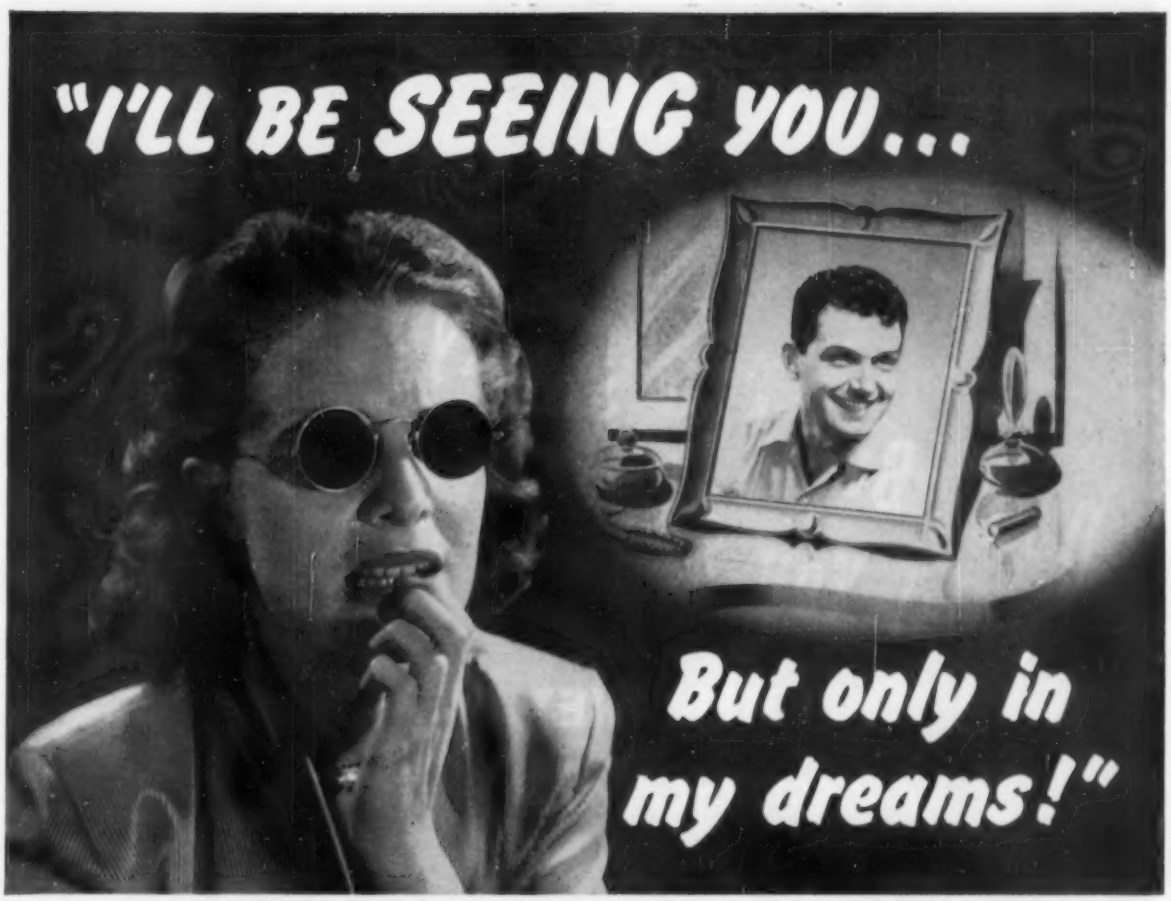
Progressive management recognizes that any accidental fatality or injury is one too many. We know that good as it may be, almost every safety record can be improved. In fact, men are devoting their energies and their lives to this form of human betterment. No one of us is completely satisfied with our accomplishments to date. Neither management, the safety department, maintenance and production officials, insurance companies, manufacturers of safety equipment or industrial workmen themselves can afford to sit back, rest on any laurels and say that safety's Utopia is actually here.

By the same token, propaganda concerning our alleged callousness and our indifference to human suffering is on a par with their other completely baseless charges. Millions of dollars are spent in this country each year to safeguard industry's men and women against preventable injury. If anything, in this inflated economy, our bill for accident prevention effort has gone up just the same as all other expenses. We know that safety and maintenance personnel is more costly than ever before and certainly supplies designed to reduce the frequency and severity of accidents are not priced on a 1939 basis.

Normally, it is rarely necessary to refute stupidly groundless and downright vicious charges from those who were our "gallant allies" so long as that role served the purpose of saving their lives. In this instance, however, lies hurled as part of baleful propaganda can be picked up by harmless dupes and, given enough repetition, can become a plague.

Fortunately, the very men and women such distortions attempt to impress are those who go to work in the industries of this country. Thus, our industrial workmen are in position to see the great lengths to which their employers, their unions and their colleagues go in a safety crusade that is the envy of the world. Those people see the machine guards, the protective clothing, the safety devices, the posters, safety manuals, magazines none of which would be in evidence if we were so intent upon turning out instruments of destruction that we would sacrifice our own men and women to grind down the rest of the world under the wheels of "Yankee Imperialism."

In the last analysis, it would seem that this phase of their propaganda is more stupid than vicious but then a tissue of lies usually is. H.A.



1 SELL EYE SAFETY TO EMPLOYEES
Ask your distributor's representative to show you the kit of posters, pay envelope inserts, PA system scripts and other material that sells workers forcefully on *desire to use* proper safety eyewear.

2 SAFETY GLASSES FOR EACH JOB
A complete range of Bausch & Lomb safety eyewear, engineered to meet the most rigid tests for each job classification in your plant.

3 PROTECTION *PLUS* CORRECTION
For at least 50% of your workers prescription lenses are necessary to working efficiency as well as to safety. Your B&L distributor offers prompt prescription service on all types of industrial eyewear.

THIS picture story is a bitter one in the eyes of the younger workers in your plant.

New employees, usually inexperienced, represent fertile ground for seeds of incaution. To help prevent a rise in eye accidents, Bausch & Lomb suggests extra educational effort in their direction.

If the picture above stirred a spark of interest in you, it will in many of your employees. See it in poster form along with other graphic educational material designed to help make workers *want* to conform with your safety regulations. It's part of the *total* eye safety service of this great pioneer in industrial eyewear. Bausch & Lomb Optical Company, 693-14 St. Paul St., Rochester 2, N. Y.

BAUSCH & LOMB *Safety Eyewear*

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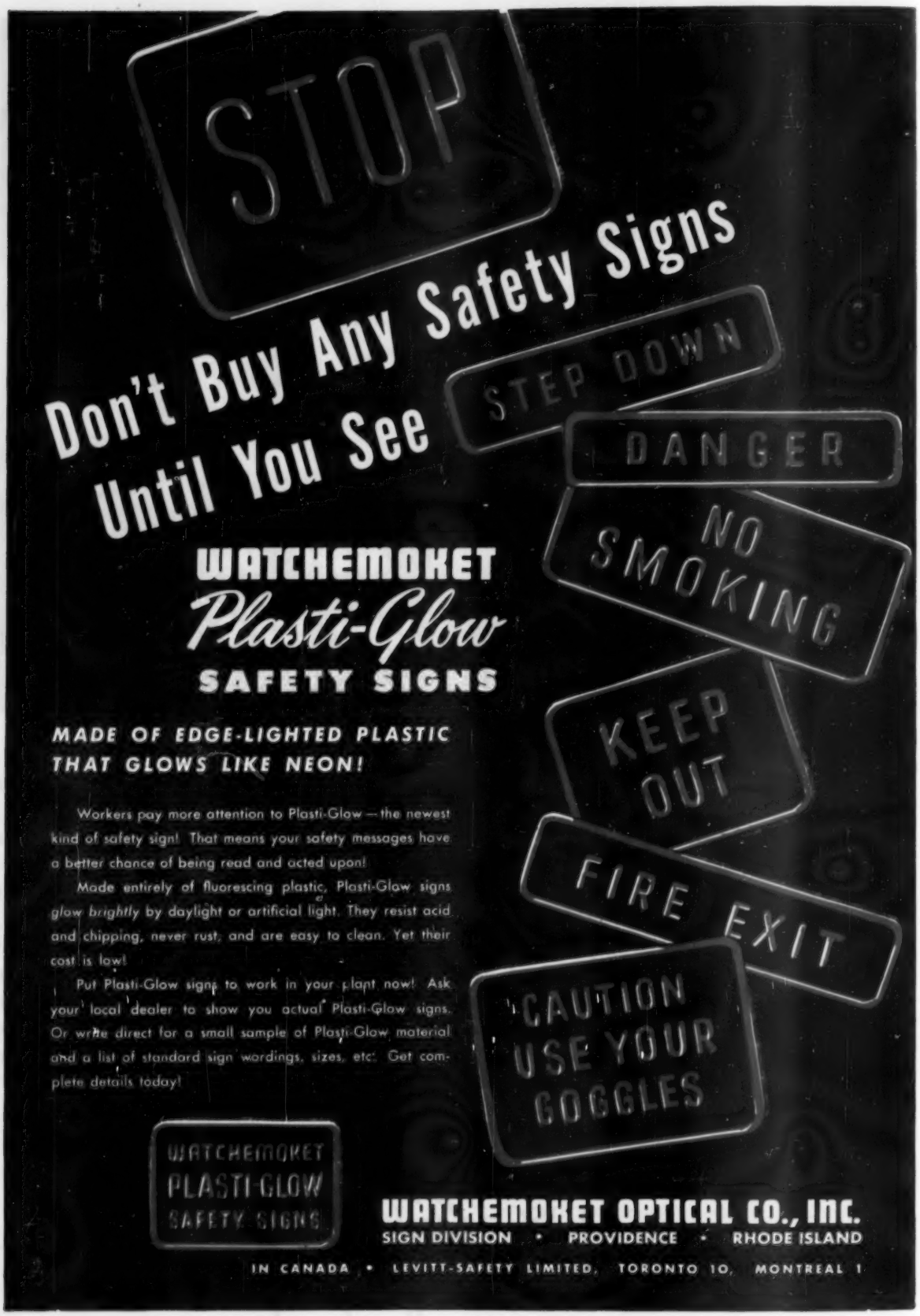
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Don't Buy Any Safety Signs
Until You See
STEP DOWN
DANGER
NO SMOKING
KEEP OUT
FIRE EXIT
CAUTION USE YOUR GOGGLES
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MADE OF EDGE-LIGHTED PLASTIC THAT GLOWS LIKE NEON!
Workers pay more attention to Plasti-Glow — the newest kind of safety sign! That means your safety messages have a better chance of being read and acted upon!
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FIRST.. in fire-stopping effectiveness with inexperienced operators...

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MODEL 20-B

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Ansul Dry Chemical Fire Extinguishers were FIRST with the GREATEST FIRE-KILLING RATINGS ever attained by hand and wheeled portable fire extinguishers*. No type or make of extinguisher has ever exceeded Ansul's effectiveness ratings for flammable liquid fires.

Ansul features include: 1) Patented nozzle which provides the most effective stream pattern for quick extinguishment of fires . . . in addition to forming a heat-shield for the operator. 2) Watertight and corrosion-resistant construction. 3) Easy, on-the-spot recharging after use without special tools . . . and many others.

Ansul *"PLUS-FIFTY"* Dry Chemical is non-corrosive, non-abrasive and non-toxic. It is safe to use on electrical fires of any voltage. And ANSUL extinguishers need only be inspected annually, NOT RECHARGED, adding ECONOMY to GREATER FIRE-STOPPING EFFECTIVENESS.

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CHEMICAL COMPANY

FIRE EXTINGUISHER DIVISION

MARINETTE • WISCONSIN

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liquid handling for Industry

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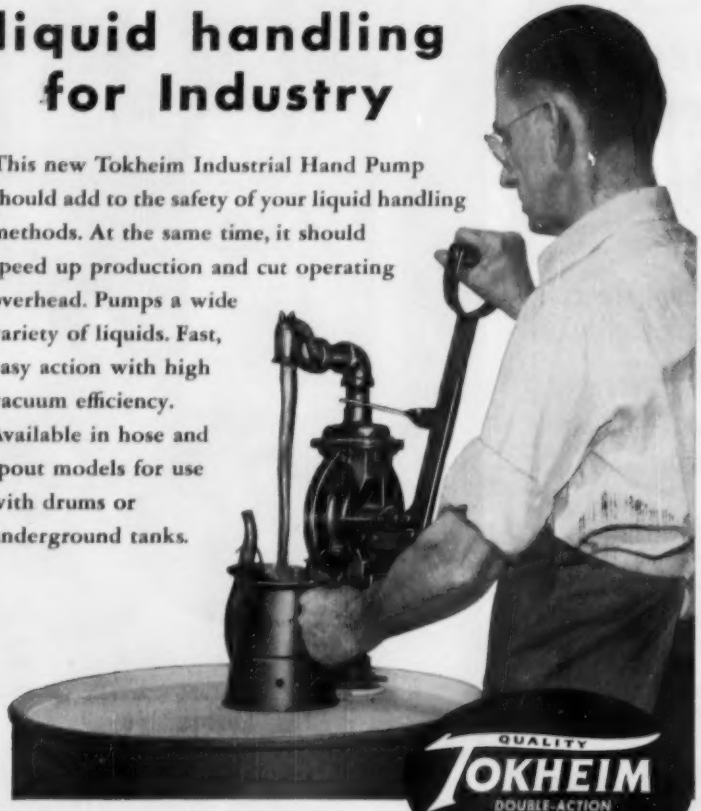


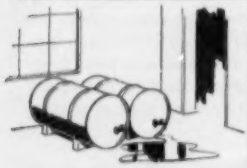
QUALITY TOKHEIM DOUBLE-ACTION HAND PUMPS

NO WASTEFUL DRIPPING
Special nozzle attachment eliminates dripping.

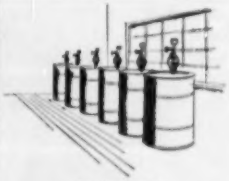
REDUCE FIRE HAZARD
Spilling of liquids is greatly minimized.

LISTED UNDER RE-EXAMINATION SERVICE UL OF UNDERWRITERS' LABORATORIES, INC.

Pump is approved for use with petroleum liquids.



NO SLIPPERY FLOORS
Liquids don't reach floor to cause accidents.



SAVE SPACE
Drums may be stored or used in upright position.

SPEED PRODUCTION
Liquids are pumped from drums at any desired speed.

Write for literature and detailed information.

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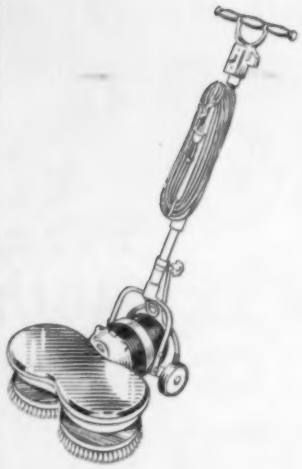


THE Plant Maintenance Show, which moved East for the first time when it opened at Convention Hall, in Philadelphia last month, attracted approximately 14,000 industrial executives from every major company in the country and some 35 foreign countries as well, according to Clapp & Poliak, Inc., the exposition management.

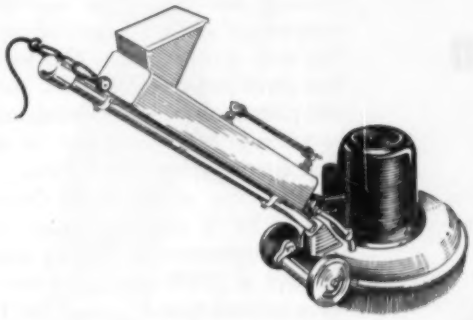
More than 6,000 machines and products were exhibited by 275 companies to comprise the greatest display ever attempted in the field of industrial maintenance. Many of the machines were introduced to industry for the first time. The exhibit area was about five times the size of the first show held in Cleveland two years ago.

The Plant Maintenance Conference, which is conducted at the same time as the show, reached record proportions. This year, to provide visitors with an opportunity for smaller meetings, there were as many as 15 sessions conducted simultaneously. In all, 57 industrial leaders, drawn from many of the nation's outstanding companies, lead the discussions.

The conference which is under the chairmanship of L. C. Morrow, consulting editor, "Factory Management and Maintenance," is sponsored by the American Society of Mechanical Engineers and the Society for the Advancement of Management. The American Society of Lubrication Engineers also conducts

THE NATION'S BIG MAINTENANCE SHOW

SAFETY MAINTENANCE & PRODUCTION
VOL. 103, No. 2 • FEBRUARY, 1952



a special panel on lubrication problems.

Heading the list of speakers was Manly Fleischmann, administrator, Defense Production Administration, who talked on "Plant Maintenance in National Defense," at the banquet at the Hotel Warwick.

In an advance statement greeting delegates, Mr. Morrow declared that "Five billion dollars is indicated as a minimum figure that will be spent in 1952 for maintenance of the nation's manufacturing plants. Most of it will go for equipment and supplies. This figure is based on the findings of a sampling survey in which I participated and I consider the conclusion to be conservative."

Mr. Morrow paid tribute to both the show and conference as having provided the first "sounding board" to permit engineers to explain maintenance principles to top management. "Maintenance has reached professional status," he asserted. "The men responsible for the maintenance function have outgrown their 'fix-it' attitude. They now think in terms of 'prevent it,' and 'plan it.' That means prevent breakdown by planned upkeep. Planned maintenance takes on still greater significance as we enter the high-production part of the defense program, because of its potential saving of equipment, materials, manpower and money," Mr. Morrow concluded.

The old-time factory janitor may disappear into the same forgotten past as the waterboy just as soon as industrialists consider seriously some of the mechanical wonders at the Plant Maintenance Show Exhibit.

Among the thousands of machines on display was a floor cleaner which scrapes a factory floor clean of heavy grime and tosses the scrapings into a hopper, while a yard-wide wire brush scrubs the floor and a fan sucks the lighter dirt into a vacuum tank. The operator doesn't even have to push it around—he drives it through the plant like a small automobile.

Scent of the Woods

Another exhibitor had a liquid which perfumes the factory floor while it disinfects it and leaves what is described as a "woodsy, pine smell" for the workers to sniff while they work.

There were also paint brushes you don't have to dip in the can (the paint is fed through a tube), and you could find a scaffolding for a three-story house which unfolds in about 90 seconds, instead of a week or so.

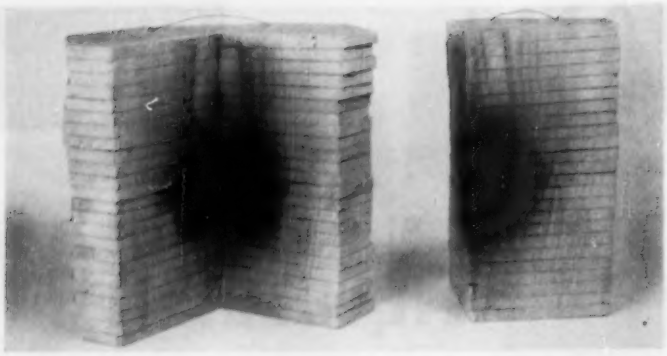
As factories get bigger and bigger, it gets tougher to find a man when you need him. So several exhibitors were showing two-way radio communication systems which will locate a fork-lift truck or one of those mechanical brooms when it gets lost.

Strangely enough, lawn mowers are getting to be quite an item of industrial equipment. The big power jobs are familiar enough, but one machine on display is really set up to cut a nice, straight edge on a lawn which covers many acres.

A machine which helped the Navy "mothball" the fleet was shown to business men troubled by excessive moisture or mildew. The device takes the humidity out of the air and makes it dry as the desert. It can be used for household basements, too.

That old bugaboo, corrosion and rust, is going to take a licking. A new type of paint was on display which can be applied directly over the rusted area without scraping. For chemical plants, where metal piping is corroded quickly, pipes made of plastics were being shown. These pipes are so light that a crew

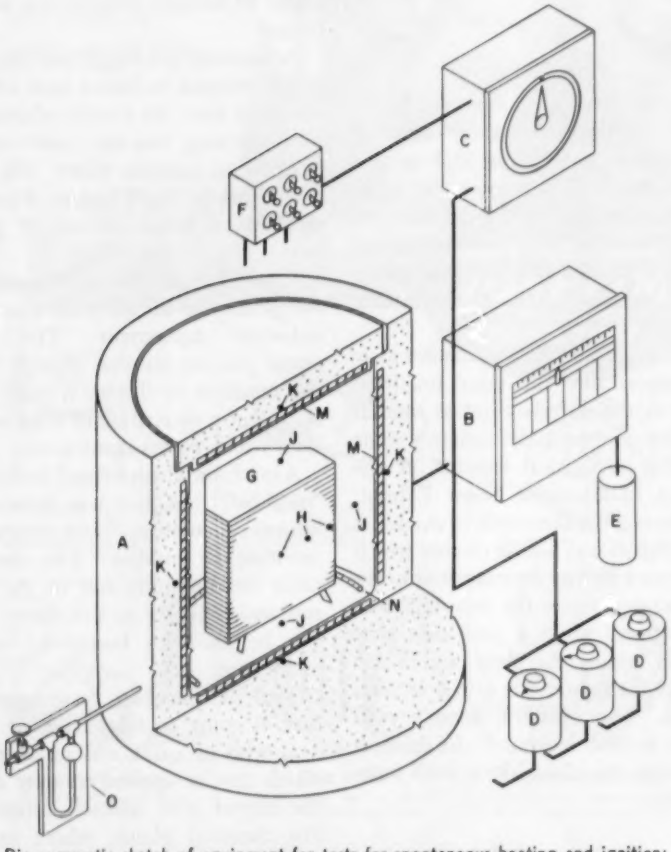
(Continued on page 37)



An octagon-shaped stack of fiberboards (cut apart after quenching) shows how that ignition from self-heating starts at the geometrical center of the specimen and spreads outward. Controlled laboratory tests of fiberboard and similar materials have revealed that spontaneous ignition can occur under some storage conditions.

Spontaneous Combustion of Fibrous Materials

Unless properly stored, fibrous materials can ignite by self-heating.



Diagrammatic sketch of equipment for tests for spontaneous heating and ignition: A, spontaneous heating oven; B, potentiometer recorder; C, potentiometer controller; D, variable transformers; E, cold junction; F, thermocouple control switches; G, stacked octagonal test sample; H, sample thermocouples; J, oven temperature thermocouples; K, heating element thermocouples; M, heating elements; N, air distributing ring; O, air flow control.

RECENT investigations by the fire protection laboratory of the National Bureau of Standards have provided conclusive proof that closely packed fibrous materials can ignite by self-heating. NBS tests show that these materials in quantity, after standing for some time, may develop an internal temperature higher than the surrounding or ambient temperature. The extent of this temperature rise depends upon the material, its density and packing, and upon the ambient temperature and the length of time this state is maintained. This work thus gives strong evidence that suitable precautionary procedures should be taken in the storage and use of such commodities. For instance, a 12-inch cube of wood fiberboard kept at 147°F develops a peak interior temperature of 148°F; a sample kept at 210°F develops a maximum internal temperature of 230°F; and a sample at 240°F develops a temperature of 305°F. If the size of the specimen is increased, the amount of self-heating is increased.

In general, the effect of self-heating is small; in some special cases, however, serious consequences may result if this effect is overlooked, particularly where materials packed in large stacks are involved. In one case, nine carloads of insulation fiberboard were shipped from a factory in the South, bound for New York State, before the heat of fabrication was completely dissipated. Seven days later one carload was discovered to be afire. The other eight cars when unloaded into an Army warehouse after 10 to 12 days on the road, were stacked in a single pile of more than 24,000 cu. ft. Four days later the warehouse and its contents were destroyed by fire, the loss amounting to 2½ million dollars.

During the investigation of the cause of the fires, the possibility of ignition due to self-heating was considered. As a result, The Corps of Engineers asked the National Bu-

(Continued on page 38)

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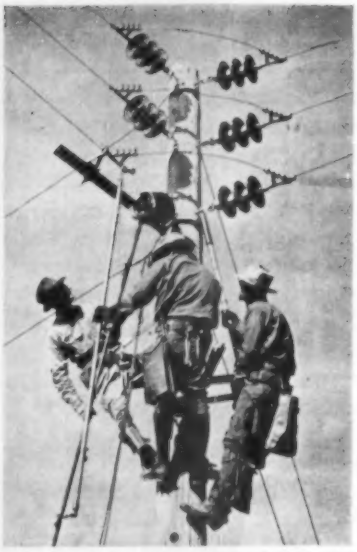
Two Rules

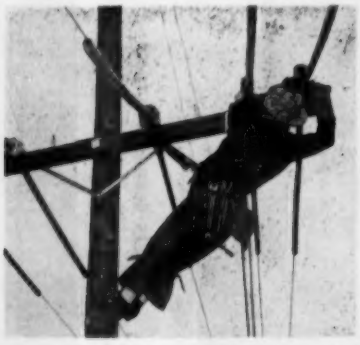
By W. T. ROGERS
Safety Consultant
Ebasco Services Incorporated



LINEMEN'S SAFETY, as in this application of dead end tools, required careful planning and cooperation by entire crew.

THE electric utility industry has paced the nation in efficiency and economy of design and operation. This is clearly evidenced by the fact that of all commodities and services available to the public, electric power costs have remained virtually unchanged since the "Thirties," while all others have advanced, many to double and triple the former price.

Since World War II, electric utilities have spent some $8.5 billion to add more than 18,000,000 KW capacity to their plants. The current program, extending through 1953, will cost $15 billion, the largest peace-time construction program undertaken by any industry, providing a total generating capacity in the nation of 99.5 million kilowatts, 117% greater than just before U. S. entered World War II.



BASIC RULE for linemen is to wear rubber gloves and to use rubber coverings for lines.

Personal Protective Equipment Is Provided

Developments in methods, procedures and equipment for protection of employees from injury have kept pace with the engineering developments in the industry. Utilities provide their workmen with all of the personal protective equipment that is needed for adequate protection, in good quantity and excellent quality. They furnish the best in tools, including hot line equipment. These protective devices and tools are frequently inspected and tested with only those meeting very rigid specifications passed for issue to the field. Field and mobile equipment, designed specially for the job requirements of utilities men, are supplied and maintained under tight specifications. Training methods, developed over years of trial and test, provide the surest way of teaching safe and efficient procedures at all levels of line and station assignments.

Despite all of this, electric utilities as a group do not enjoy a good safety performance record. Although the industry includes some companies with very good safety records, there are many others with very poor records which pull the industry average down. In these "poor record" companies the same type of accidents go on occurring, year after year, with little significant change and the rate of fatalities remains high.

The basic cause then should be obvious. Hazards we know as certainties: we can identify them and protect against them. Risks are predictable: we can prepare against them and avoid them. Man, the other element, is neither certain nor predictable. Having been supplied with all the equipment necessary to protect himself against harm, he either voids its effectiveness or avoids its use. He may not have been taught well to recognize hazards and evaluate risks, or having been taught he, either deliberately or thoughtlessly, refuses this recognition. As a result, the yearly toll of men who die unnecessarily goes on; injury on injury, disability on suffering and heavy cost to employee and employer continues. Thus, the cause is not the hazards which are inherent, but the men who, knowing the hazards, disregard them and increase the risk to themselves, *and to all who work with them.*

Contact Hazards

The Accident Prevention Committee of the Edison Electric Institute pointed out in January, 1951 that for the nine-year period 1941 to 1949, there were 1160 fatal accidents in the electric utilities industry, and 822 of them (7 out of 10) were electric shock or burn cases. The outstanding type of contact is to the hands, 165 men hav-

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FEATURE

This is the third of a series of three feature articles on Off-the-Ground Safety. The first two articles, dealing with ladders and scaffolds, appeared respectively in the December and January issues.

ing been killed through hand contacts on poles while climbing or in the working position. If all linemen would wear rubber gloves at all times, when working on or within falling or reaching distance of energized conductors, accidents from this cause would be eliminated. The remedy is full use of rubber protective equipment or where indicated, the use of live line tools.

A number of companies have eliminated hand contact accidents by adopting the "ground-to-ground" rule (that is, put on gloves before leaving the ground, keep them on until after returning to the ground). One company, now requiring the use of rubber sleeves, reports that, prior to establishing that requirement, they had fourteen accidents resulting from arm contacts in the period 1941 to 1943. Since then (1943 to 1950), this company has had no arm-contact accidents.

Primarily, it is indicated that efforts to reduce contact accidents should be concentrated, along with measures to inculcate habits of awareness at all times on the job.

The use of rule-books, manuals, safety meetings, posters and most of the other forms of mass appeal have apparently reached the point of diminishing return. These media of appeal are necessary and useful, but they need extension and individual application. As usual, this means we come again to the foreman. Improvement will come only in proportion to the foreman's effort with his own gang.

Tail-Board Conferences

Two procedures, both basic, have been advocated by the Accident Prevention Committee of Edison Electric Institute. These are the "tail-board conferences" and the "at all times" use of rubber protection equipment or live line tools. The one would, if followed, provide the best means for the foreman's approach to improving the safety performance of individuals in his crew; the other would, if insisted upon, greatly reduce shock and burn cases, both fatal and non-fatal.

The "tail-board conference" is an informal "confab" among the foreman and crew members on the job about to be done. It works this way: the foreman receives his instructions on a particular job to be done; on arriving at the job site he gathers the crew at the tail-gate before they unload and goes over the job with them. He points out what is to be done and the order of procedure. In this particular, he includes the safety precautions to be observed at each step. The men discuss details of the job with him and make any suggestions they have to make. When all have signified their understanding, the job proceeds under direction of the foreman. In most cases, these sessions need not exceed five minutes. If used on each job, there is reasonable assurance that the job to be done, and each man's part in it, are fully understood by the entire crew and each man has heard again the safety precautions he must personally observe for the mutual protection of all. Further, the possibility of error on the job is reduced with the increased team work of the group.

Couple with a thorough "tail-board conference" procedure an appreciation of the importance of using rubber protective equipment and the beginnings of an accident reduction experience are established. Those who object to this require-

(Continued to page 46)

for Linemen's Safety

If linemen can work safely under adverse emergency conditions, then they should also be able to complete the ordinary, routine job without accidents.

"TAIL-BOARD" CONFERENCE: Laying out their work at the start of the day's job, line crew keeps safety in mind. The line foreman (center) explains the job

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Work Injuries Rise

INJURY-frequency rates in manufacturing and in most nonmanufacturing industries increased slightly from 1949 to 1950, according to final summaries prepared by the U. S. Department of Labor's Bureau of Labor Statistics.

The average frequency rate for all manufacturing industries increased from 14.5 injuries per million manhours worked in 1949 to 14.7 in 1950—slightly more than 1 percent. Monthly rates for manufacturing had shown a steady upward trend during 1950, from record low levels at the end of 1949. However, lower rates for the first 4 months of 1950 than for the same months in 1949 partially offset the higher rates during the last half of the year. Although the average for the year 1950 was only slightly above the 1949 average, the December 1950 rate was 14 percent above that at the close of 1949. Latest available indications are that injury rates have moved even higher during 1951.

Injury-frequency rates for most nonmanufacturing industries (exclusive of mining) tended to be somewhat higher in 1950 than in 1949. Of the 52 individual classifications, 21 recorded significant increases; 13 reported decreases; and 18 showed changes of less than 1 frequency-rate point. Although the rates for mining remained relatively high, they were generally somewhat lower than in 1949. Five of the 21 individual mining classifications did show increases, but 13 recorded decreases, and 3 showed little change.

Manufacturing

Of the 164 individual manufacturing classifications, 68 showed little change, 34 recorded significant decreases, and 62 reported increases of 1 or more frequency-rate points. Of this latter group, 6 industries showed increases of 5 or more points: Beehive coke ovens; Metal doors, sash, and frame; Nonferrous foundries; Metal household furni-

ture; Cold-finished steel; Planing mills.

In contrast frequency rates for three industries declined sharply. For wineries the rate dropped from 25.4 in 1949 to 19.8 in 1950; for elevators, escalators, and conveyors, from 21.3 to 16.1; and for wood office furniture, from 27.4 to 22.2.

The lumber and wood products group recorded the highest injury-frequency rate, 49.8. Four of the seven highest individual industry rates in manufacturing were in the lumber group. Following are the highest-rate manufacturing industries in 1950: Logging; Sawmills; Beehive coke ovens; Sawmills and planing mills integrated; Planing mills; Boat building and repairing; Structural clay products.

Outstandingly low rates in manufacturing were shown for the synthetic fibers (2.1), synthetic rubber (3.4), explosives (3.8), radio tubes (3.9), aircraft (4.0), electric lamps, bulbs (4.0), ophthalmic goods (4.8), women's and children's clothing (4.9).

Among nonmanufacturing industries (other than mining) the construction group generally reported the highest rates. The group average increased from 39.9 injuries per million man-hours in 1949 to 41.0 in 1950. The rate for general contractors increased from 42.6 to 44.5. Averages for special trade contractors changed little but rates for individual industries within this classification fluctuated widely.

Services and Trades

The personal services and trade industries, as groups, both showed minor increases in injury-frequency rates, as did police and fire departments. In the transportation group, trucking and hauling reported an increase from 28.3 to 36.6. Stevedoring, on the other hand, recorded a decrease from 67.6 to 59.4. Public utilities showed somewhat lower rates in 1950 than in 1949. Waterworks reported a drop from 27.5 to 21.9.

The injury-frequency rate for the important coal-mining group

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dropped from 56.0 in 1949 to 52.8 in 1950; metal mines, from 48.5 to 45.6; quarries, from 38.1 to 36.6.

Severity of injuries showed an encouraging decline. In manufacturing the average days lost or charged per case dropped from 93 in 1949 to 84 in 1950. This decrease offset the slight increase in frequency rate, with the result that the severity rate dropped from 1.4 to 1.2—the lowest rate on record.

Severity rates were highest in the following industries: logging (12.9), structural-steel erection and ornamental iron work (11.0), bituminous coal mining (8.1), anthracite mining (6.9), heavy construction (6.4), stevedoring (6.0), planing mills (5.8), integrated saw and planing mills (5.1), sawmills operated separately from planing mills (4.9).

Safety Study for Student Engineers

NO ENGINEERING education is complete without a study of safety engineering, H. W. Heinrich declared at the 72nd annual meeting of the American Society of Mechanical Engineers in Atlantic City. He advocated the integration of safety engineering with existing studies and described a method which can be carried out without additional time for either instructor or student in an already full schedule.

"A moral obligation rests on both the college and its graduate engineers," he said. "This can be discharged only when due regard for health, safety and property damage is exercised towards those who may be affected by the work for which the engineer is responsible.

"The purpose of integration is to create an informed awareness of the effects of accident occurrence on the efficient production of goods and services, likewise on persons and property, and in addition, to impart knowledge of the basic principles of accident prevention and to acquaint the student with the properties and characteristics of materials, methods and equipment that may cause injury or property damage."

Suitable Studies

After consultation with 32 deans, professors and instructors, the A.S.M.E. Safety Committee drew up material suitable for one term class instruction, Mr. Heinrich said, adding that it is hoped that this will set a pattern for other courses.

In addition to the integration of safety engineering Mr. Heinrich recommended "separate safety engineering courses and organized college safety activities." "The latter should include a complete safety program with responsible direction, student participation, accident investigations, first aid and hospital facilities, safety publicity and periodical surveys and inspections," he said.

While he emphasized the necessity for integration so that all engineering students could acquire an awareness of accident occurrence and prevention sufficient to discharge their normal obligations as practicing engineers, he expressed the conviction that the importance of safety engineering deserves a distinctive college degree.

Vision Program Survey

THE National Society for the Prevention of Blindness pledged that it will continue its intensified program of promoting good eye-health and eye-safety measures in industry. The announcement was made, at the Society's 37th annual meeting, along with the announcement of the $403,359 budget. The 1952 budget is an increase of about $40,000 over the estimated $360,820 expenditure during 1951.

Dr. Franklin M. Foote, executive director, revealed that during the past year the "Society has been conducting a survey of eye health and safety measures in iron foundries in cooperation with the Gray Iron Foundries' Society. Spot checks were made personally in about 20 foundries and a total of 1,300 plants were canvassed by mail; about 300 of these have returned questionnaires and appraisal forms with data which are now being tabulated and analyzed. The report to be issued will include recommendations as to desirable safety practices."

Wise Owl Club

In his report he commented on

(Continued page 47)

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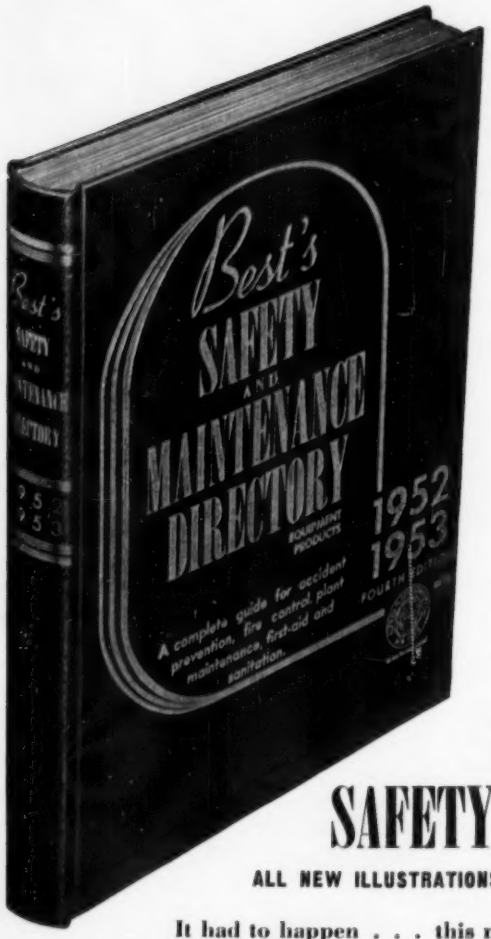

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How to Control Concrete "Dust"

The use of a sealer on concrete floors will not only prevent "dusting" of the surface but also make general maintenance easier and more efficient.

By **WILLIAM MALLWITZ**
Floor Maintenance Director
Griggs, Cooper & Co.
St. Paul, Minnesota

CONCRETE floors hold many advantages in industrial plants such as ours where heavy loads and in-the-plant truck traffic is excessive. Because concrete floors are rugged and tough, many floor maintenance men seem to be of the opinion that they will withstand a great deal of relentless pounding, jarring and wearing with very little maintenance other than sweeping and a frequent damp mopping.

While it is true that concrete can take a lot of punishment with far less maintenance time and cost than most other types of floors, it will serve far better and last longer, with even greater maintenance economies, if the surface is sealed with a good concrete preserver or sealer. One of the advantages of sealing a concrete floor surface is to prevent excessive dust, a problem any food plant has to contend with continually. A fitting example of how a properly sealed concrete floor will minimize dust is seen in our large St. Paul, Minnesota food processing plant.

A few years ago I was given the opportunity to test certain concrete preservers and seals in an effort to reduce dust along traffic lanes and other areas of the plant. After rigid tests for wearing and anti-slip qualities, and of course, ease of cleaning and the ability to minimize dust conditions, we selected a concrete preserver * that most closely met our requirements.

Maintenance Advantages

This preserver was applied throughout the plant and since the first application, we have discovered a noticeable lack of dust being raised by floor traffic. The movement of floor traffic used to fill the air with dust, much of it settling on stock and fixtures making it necessary to dust them often. We believe our concrete floors now to be as dust-free as it is possible to make them, because we have them sealed against

(Continued page 45)

* The name of this product can be obtained by writing to the Editor.

Safe Crossings

To combine safety with the efficient movement of products and personnel, there are three general methods of handling cross-traffic at conveyors: Over, Under, and Through the conveyor.

PLANNING a fixed conveyor system is a two-way proposition. The professional conveyor engineer knows all the details of available equipment, has long experience with scores of different situations to call upon, and generally is cognizant of the special needs and situations faced by the prospective user. Accordingly, he can design and recommend wisely and well. However, the plant manager or materials handling engineer of the user firm has a big responsibility—the responsibility of coordinating the conveyor system with all of the other operations, traffic patterns, and facilities in the plant.

Indeed, conveyor engineering is faulty without expert thinking from both viewpoints.

Not the smallest problem which the user-plant must solve is that of cross-traffic—for there are shop trucks and people and goods and vehicles which must move with varying frequencies and in various numbers across the lines of conveyor traffic.

Solving the riddles of cross-traffic is as challenging as it is important. There are dozens of ways of doing it, and there is a vast lore of experience to call upon. Ingenuity pays off. Mechanical common sense saves time, trouble and money. And close coordination with plant safety committees and safety engineers is necessary.

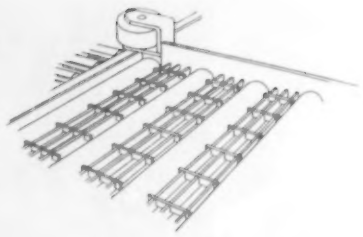


Figure 1: Step Plates Between Rolls.

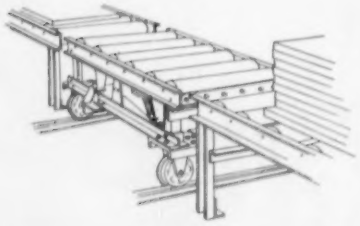


Figure 4: Movable Section Mounted on Wheels.

Eliminating Crossings is Better Than Engineering Them

The initial step in tackling the problem of cross-traffic is to see how much of it can be eliminated. There are three approaches: (1) relocating the traffic lanes, (2) rearranging the working areas, and (3) rearranging the plant structure itself in minor ways.

The first approach—relocating traffic lanes—is the most obvious and the most common. But many an engineer will take off in this direction, and fill scratch pads with possible traffic-flow systems, without considering that a mere shift of an operation from one room to another, or from one side of a line to another, might work wonders. Even less common is the wisdom of analysing what simple changes and relocations of ramps, partitions, doorways, shipping docks and aisleways can achieve. Perhaps the most common modification of an existing structure to simplify a conveyor installation is a simple hole in a wall to accommodate both conveyor and load and shorten its run.

After all possible steps have been taken to eliminate crossings, three solutions of each point of unavoidable intersection are possible: (1) carry the cross traffic *over* the conveyor, (2) carry the cross traffic *under* the conveyor, and (3) carry the cross-traffic *through* the conveyor.

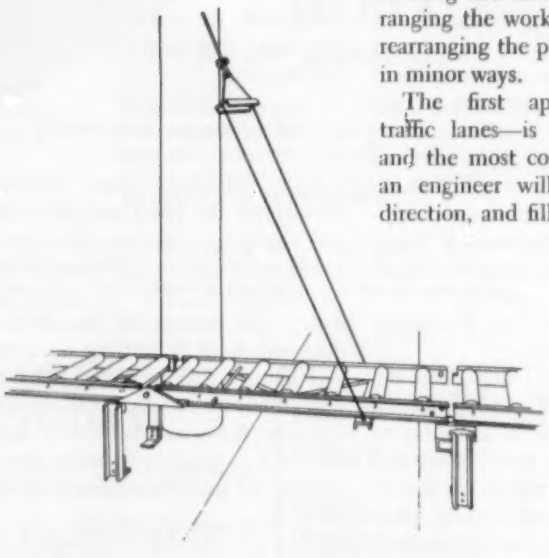


Figure 5: Hinged Section can be raised for cross-travel.

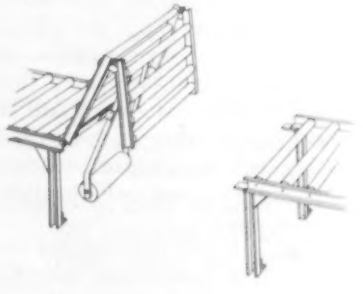


Figure 6: Folding Section.

Figure 2: Stile for Crossing Conveyor.

By H. C. KELLER
Manager of Engineering
Lamson Corporation

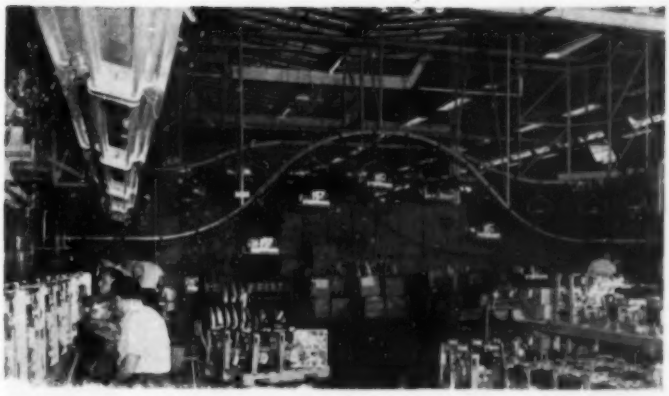


Figure 3: Suspended conveyor has elevated section to permit access to storage.

for Conveyors

Over-the-Conveyor Systems

Over-the-conveyor systems subdivide into those in which the lateral traffic is in the same horizontal plane as the conveyor itself, and those in which this traffic is elevated so well above the conveyor that both the conveyor and its load amply clears the "bridge." Over-the-conveyor traffic is generally confined to foot traffic.

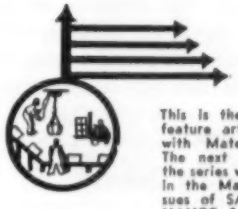
Conveyors with step plates between rolls are the most common solution in the first case. (See Figure 1.) They may be recessed to floor levels, or floor levels raised by ramp or platform to match the conveyor level. If, however, the conveyor width doesn't exceed 18 inches, the usual procedure is to locate the conveyor top surface 6 to 9 inches off the floor for easy over-stepping.

Where, as is frequent, the conveyor line must be at bench or waist level, the usual practice is to construct permanent stairs or stiles with handrails. (See Figure 2.) Good carpentry and good welding have evolved many fine designs for this purpose.

In this connection one should not overlook the American Standard Safety Code, ASA State B20.1-1947, approved by the American Standards Association and sponsored by the National Conservation Bureau and the American Society of Mechanical Engineers.

This code specifies that, "Cross-overs provided with stairs and handrails, and extending above the load clearance on the conveyor, shall be supplied wherever the conveyor exceeds 18 inches in width. When conveyor is 18 inches wide or narrower it will be permissible to provide the stairways only to the top of the conveyor guide or guard rail and permit persons to step across the conveyor. In this latter construction, however, the top step or landing shall have no less than a 12 inch tread."

FEATURE



This is the first of three feature articles concerned with Materials Handling. The next two articles of the series will be published in the March & April issues of SAFETY MAINTENANCE & PRODUCTION.

A conveyor width of more than 18 inches is not the only reason for stile-type cross-overs which amply clear both conveyor and load. Often one wishes to protect the products on the conveyor from the dirt shed by foot traffic. In such cases shields or roofs over conveyor and load and under the cross-over bridge, are provided. An interesting case is in the plant of a manufacturer of pharmaceuticals and proprietary medicinal products handled on conveyors in rooms equipped with sterilizing lamps. In this case lamps are located under the bridges so that the conveyed products are at no time in germicidal shadow.

There is nothing wrong with stepping on a conveyor if the conveyor is designed for such loads and if the safety engineering is proper. The slat type of conveyor, for example,

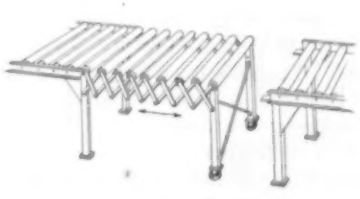


Figure 7: Telescoping Section.

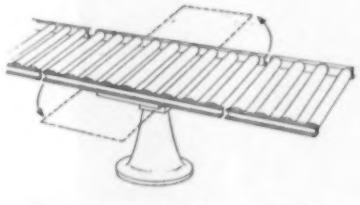


Figure 8: Pivoting Turnstile Section.

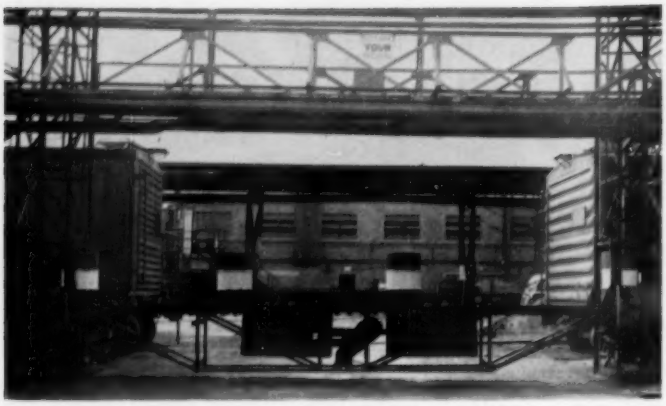


Figure 9: Vertical-Lift Bridge at Bayonne, N. J. Conveyor section can be raised out of roadway.

is designed to sustain such service, and, in fact, is often specified where workmen and equipment are used right on the conveyor surface at floor level. Except for such specific planning, *it should be made improper to step upon conveyors—even though the modern safety measure of step plates between rollers (designed to prevent serious consequences from falls or accidents) are provided.*

Under the Conveyor

Perhaps the easiest and commonest method of carrying cross-traffic under conveyors is to raise the conveyor as a whole. This is actually the *raison d'etre* for overhead chain and monorail systems. Almost as common is the suspension of belt or roller conveyors from the roof, rather than supporting them from the floor.

If the entire conveyor system in a work area cannot be raised above 7 feet, because of operating requirements or awkward structures, it is often practicable to elevate only certain sections of it over aisles and passages. Conveyor engineering is so highly perfected and elaborated today that powered sections of either belt, escalator, pusher-bar, chain or flight types can permit inclines and declines of conveyors at remarkable angles. (See Figure 3.)

In connection with traffic under fixed conveyor sections, the American Standard Safety Code says, "It will be permissible to allow passage under conveyors even if they are installed below the recommended minimum 7 feet of headroom, excepting at main aisles, and provided such passages are equipped with tell-tales indicating low headroom." Descending ramps or stairways are used, but very infrequently for reasons of the high cost of floor level modifications.

Through the Conveyor

It is in the realm of going through conveyor lines by means of movable sections of one sort or another that most ingenuity has been exercised.

The most obvious approach is to incorporate a portable conveyor element in the conveyor line, and such sections are often carried on casters. (See Figure 4.) This approach is reasonable if the portable section is easily and inexpensively available and if cross-traffic is so infrequent that special built-in gates and jointed sections are not justified.

The simplest of all built-in devices is the "hinged section" (See Figure 5.)—which may or may not be counterweighted (at the side or below), which may or may not be lifted by power (winch, hoist or gear segment), and which may hinge either vertically or horizontally as a gate.

The American Standard Safety Code has this to say about hinged sections, "Vertically hinged sections of gravity roller conveyor, chute, belt, or other types of conveyors, that are equipped with counterweights and are to be manually raised, should be designed so that an effort of not less than three pounds nor more than five pounds will permit the section to be raised. The counterweight arrangement should be such that the unbalanced component of the counterweight increases as the section approaches the vertical position. All hinged sections of power conveyors shall be designed so that they cannot be raised while the conveyor is in operation, or shall automatically stop the conveyor when the section is raised. Hinged sections that are raised or lowered by power should be provided with mechanical safety devices which will prevent them from falling in case of power failure or failure of the mechanical parts of the lowering device."

Many other arrangements for temporarily moving or opening conveyor sections have been employed. Folding sections have been used (Figure 6.); sections which telescope (either linearly or on the lazy-tong principle) may be found (Figure 7.); turnstile pivoting is sometimes involved (Figure 8.). But

Figure 10: Swing-Gates at CB&Q Freighthouse in Chicago.

such devices are generally more costly and less practical than simple hinged sections.

The vertical lifting of a removable conveyor section is often logical where cross-traffic is infrequent and wide crossways are needed. Perhaps the most refined example of this technique is the vertical-lift bridge carrying live-roller sections between two building docks at the Bayonne refinery of Standard Oil of New Jersey. (See Figure 9.) In this case the lifted section is long enough, and can be raised high enough, to permit the access of the plant's fire trucks into the alleyway between buildings. An added versatility is that in the lowered position the movable section operates at a level which matches the tail-gate level of the trucks used to deliver empty oil drums—and the movable section of live-roller conveyor serves as a highly efficient unloading dock.

Hinged sections generally swing upward around a single axis at one end of the movable section. However, this axis can be brought nearer to the center of the movable section (if cross-traffic and floor clearances permit) so that a part of the movable section may serve as its own counter-weight. Another device is to have two hinged sections meet at the center of the cross-aisle, either as cantilevers or folding-leg supported sections.

Swing Gates

Swing-gates on casters are handy when movable sections are heavy and floor areas permit. A most interesting example is the swing bridge at the CB & Q Freighthouse No. 10 in Chicago where an entire 50-foot run of overhead chain-tow (and the roofed bridge in which this section of the chain-tow is located) swings once nightly over three railroad tracks to permit the spotting of boxcars for the next day's l.c.l. freight reclassification work. (See Figure 10.)

In conclusion, let the plant engineer or materials handling engineer

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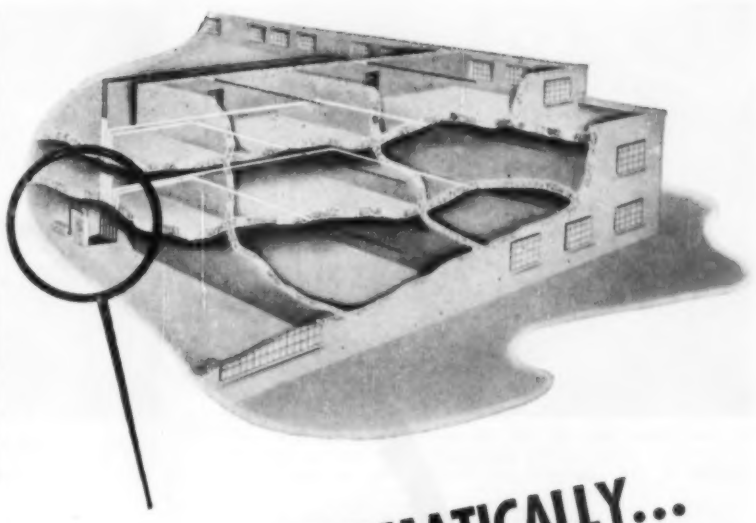

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By HARRY M. SCHWALB
Fisher Scientific Company
Pittsburgh, Pennsylvania

The use of a metal guard will eliminate the hazard of injury from flying particles of glass in case the desiccator collapses.

A CHECK LIST

Q.—What is one of the safest places in the industrial plant?
A.—The laboratory.
Q.—What is one of the *unsafest* places in the industrial plant?
A.—The laboratory.

Since their introduction a few years ago, electric mantles of aluminum-and-glass-cloth have become a safety "must" for heating of flasks. They eliminate open flame, fumy oil baths. Note also the molded-rubber safety pail for handling acids, bases, salts, etc.

ODDLY enough, both of the above sets of questions and answers are true. The reason that industrial laboratories, large and small, are generally safe places to work in is that laboratory personnel —the scientists, engineers and technicians busy winning what the President of the United States calls "the battle of the laboratories"—rank among the nation's most highly trained, most intelligent, most safety-conscious personnel.

But plant laboratories are not staffed entirely by researchers who have helped split atoms or synthesize vitamins. In most plants, untrained or only partially trained personnel perform a variety of operations from cleaning up the lab to preparing, analyzing and testing chemical compounds.

These workers face a variety of hazards from strong acids and other corrosive materials, toxicity, fire, electric shock, glassware, and explosions. Storage and disposal risks are always greatest in a plant's lab, too.

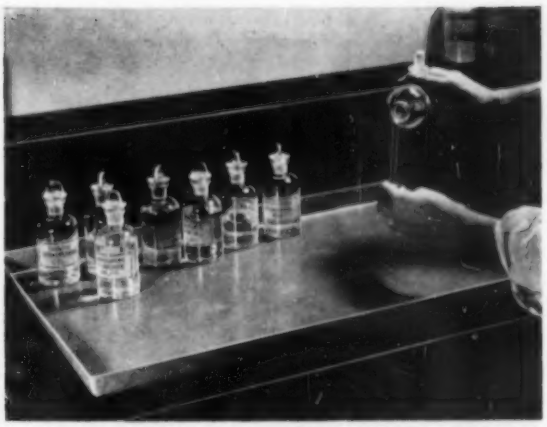
What isn't generally recognized is that danger may come not only from such new sources as radioactive materials (many plants, for example, now use "cobalt 60" as a "tracer" to catch flaws in castings) but from such an old, familiar friend as carbon tetrachloride. It is now known that 200 milliliters of carbon tet evaporating in an unventilated lab will *kill*. Another old standby—hydrogen sulfide—is now known to be five times more toxic than chloroform; 20 parts per million parts of air in the 8-hour day is the threshold limit!

Small wonder, then, that today's mills and factories cannot, when considering safety maintenance, afford to overlook the laboratory.

Safety Committees Recommended

An expert recommendation for all industrial labs comes from Dr. Lewis

A good fume hood is indispensable for labs working with noxious or poisonous fumes. Note the small carbon dioxide type fire extinguisher at left, the kitchen-like spotlessness of lab.



"A small safety lab within the lab" is what committees call this special tray made from glass embedded in plastic resin. It reduces the possibility of lab accidents due to spillage.

FOR LABORATORY SAFETY

J. Cralley, Senior Scientist at the Division of Occupational Health (a branch of the Federal Security Agency's Public Health Service): "Every laboratory should have a health-and-safety committee." A three-man committee might consist of one representative from management, one chemist (or allied scientist), one engineer.

This committee will meet (i.e., will check lab procedures, apparatus, safety equipment) at least once each six weeks. Time required: one hour.

The membership, this safety authority suggests, should rotate annually to distribute its benefits more widely. One benefit: the committee members themselves become absolutely "sold" on health and safety. And the existence of such a group keeps the workers thinking in terms of "safety hazards," too.

Here is a check list of some major items for the committee to consider . . .

☐ Are goggles worn whenever an operation is potentially dangerous or when the hazard involved is unknown?

This includes work with bromine, volatile bromine compounds, chlorine, maleic anhydride, phthalic anhydride, strong ammonia, irritating dusts, acids and alkalies; the making of fusions; the breaking up of solidified melts; the chipping of residues from metal equipment. Distilling at high temperatures or under reduced pressures also requires goggles.

☐ Are safety-glass shields used in front of glass equipment when there is solvent or vacuum distillation or in any reaction where there is a possibility of breakage or violent reaction?

☐ Do lab assistants handling particularly irritating chemicals wear rubber gloves (or, where effective, protective creams)?

☐ Are respirators available for personnel handling irritating powders or mildly toxic materials?

☐ Are gas masks available for emergency use by the chemists, and are their locations clearly known?

☐ Do all lab workers know how to operate fire extinguishers? (Carbon dioxide and dry chemicals are, of course, first choice since laboratory fires are much more easily smothered than drowned).

☐ Is there an emergency shower for use when lab clothing catches on fire or when large amounts of corrosive liquids have been spilled on clothing or skin?

☐ Is the laboratory *clean*?

Actually, soap and water place among the finest safety aids known —and it is an excellent practice for lab personnel to wash hands and arms several times a day to remove bits of irritating chemicals unknowingly picked up. Dr. Henry F. Smyth, Jr., staff member of the famed Mellon Institute for Industrial Research, goes so far as to say that in handling chemicals "scrupulous cleanliness, prompt removal of splashed clothing and washing of contaminated skin will prevent nearly every burn"!

First Aid

☐ Finally, the safety committee should ask—and very pointedly:

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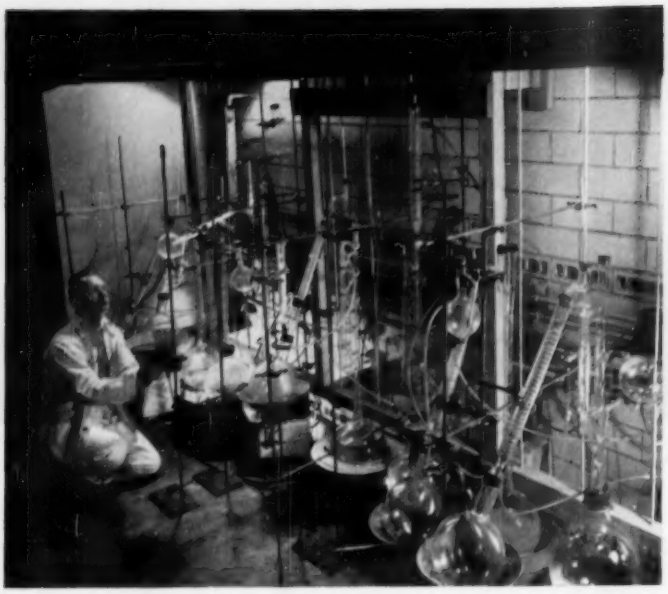
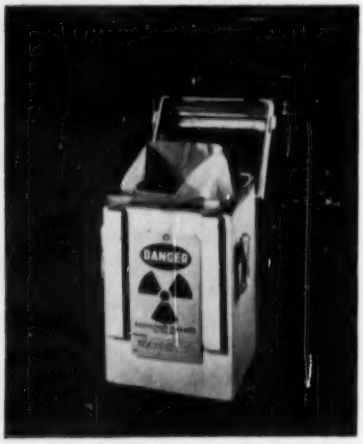


Laboratory men in Eastman Kodak's Synthetic Chemicals Division are issued jackets with long sleeves and overalls because the loose folds of smocks would catch in the equipment, most of which is erected on the floor. The clothing is washed daily.

Long-handled tongs prevent burns in getting sample crucibles into lab furnaces and ovens.



"Good housekeeping" will solve many of the problems of industrial labs using radio-isotopes. Here is a solid-waste container suitably labeled, for use on lab benches.

"How good are our first aid kits?"

Management's interest in the matter often ends with the purchase of the requested number of medicine cabinets. It is the committee's duty, therefore, to determine exactly how useful the kits are. ("What happened when an acid burn had to be treated?" . . . "Or are the kits good *only* for minor cuts and bruises?")

Because of the diverse and special nature of lab work, many of the industrial or household first aid kits available will not be found adequate for lab emergencies. A laboratory first aid kit able to treat cuts, collapse, poisoning, toxic headaches, shock and corrosive burns should include the following items:

4 Ounces	5% Acetic Acid Solution
1 Roll	½" Adhesive Tape
4 Ounces	1% Ammonium Hydroxide
½ Dozen	Amyl Nitrite Capsules
4 Ounces	Aromatic Spirits of Ammonia
2 Rolls	1" Bandage
1 Roll	3" Bandage
3 Ounces	Boric Acid Powder (Boracic Acid)
1 Tube	Boric Acid Ointment
1 Tube	Burn Ointment
2 Ounces	Castor Oil
1 Ounce	Copper Sulfate
4 Ounces	Cotton, Sterile
2 Ounces	Egg Albumin
1 Only	Eye Cup
1 Dozen	Gauze, Sterile, 3" Squares
1 Ounce	Magnesium Sulfate Powder

A polyethylene pouring-spout for bottles and jugs eliminates dangerous "blurb", splash and after-drip in pouring corrosive reagents.

1 Ounce	Recognized Antiseptic
6 Ounces	Milk of Magnesia
4 Ounces	Mineral Oil
2 Ounces	Mustard, Powdered
1 Tube	Petroleum Jelly
1 Pair	Scissors
4 Ounces	Sodium Bicarbonate
4 Ounces	Sodium Hydrogen Phosphate
1 Ounce	Sodium Sulfate
2 Ounces	Sodium Thiosulfate
1 Ounce	Soluble Starch
1 Only	Stainless Steel Teaspoon
1 Ounce	Tannic Acid
1 Only	Tourniquet
1 Pair	Tweezers
2 Ounces	Universal Antidote
2 Dozen	Wood Applicators

To promote laboratory safety, the Fisher Scientific Company—with the cooperation of a distinguished group of chemists, toxicologists, physicians and laboratory directors—has developed a comprehensive Laboratory Emergency Chart. Covering, in *alphabetical* order, emergency treatments for almost every conceivable laboratory injury, the chart is now available to the nation's laboratories.*

Look at Techniques, Too

In addition to checking for safety equipment, safety committees should take a look at laboratory operations.

☐ Is the handling of glass tubing and rods correct?

Mishandling here is especially dangerous (as unforgettable photographs of mutilated palms in many industrial records will attest). The accepted method is to wrap the glass in cloth while inserting it into the stopper or when breaking it off into shorter lengths. Leather gloves are a safeguard in this operation, as they are in cork boring.

☐ In working near agitators, are lab men careful that loose clothing

* Copies of the Laboratory Emergency Chart will be sent to readers for their plant laboratories on request to the Editor.

(and, of course, for women, loose *hair*) does not entangle in the revolving shafts?

☐ Work with electrical equipment presents still another problem. Is permanently located equipment (furnaces, ovens) placed in normally dry areas?

☐ When portable equipment (agitator motors, hot plates) are used in wet areas, is every precaution taken to avoid water or other liquids coming in contact with the equipment and with connecting wires?

☐ When pipetting corrosive liquids, hot solutions, volatile or poisonous chemicals, do the workers use safety pipette fillers, atomizer bulbs or vacuum lines to avoid getting these liquids into the mouth?

☐ Are there modern, well-lighted fume hoods ("the chemist's lifeline") in the lab?

Certainly reactions involving hydrogen sulfide, aniline, ortho-nitrotoluene, para-nitrotoluene, nitrobenzene and all other nitro and amino compounds should be carried out in a hood.

Of course, after long use a hood may "gunk up" from acid gases and carbonaceous materials. Air velocity meters for checking speed of flow in the hood are used by large industrial labs, insurance carriers and public health agencies; smaller labs can use "smoke tubes" which indicate direction and approximate speed of air flow.

A final check for the lab safety committee might well be storage and disposal, that is, how materials get into the lab and how they get out.

☐ Does the plant's lab have an adequate, efficiently-planned storage room?

In such a room, heavy items will be stored on or near the floor; bulky or fragile apparatus will be clamped to the shelves. Wooden ridges at the front of the shelves will serve as excellent insurance against damage from chemical spillage.

In addition, many labs now store all glass bottles containing flammable liquids, hydrogen peroxide and similar materials inside metal or stoneware receptacles large enough

(Continued on page 57)

Manual of Accident Prevention in Construction Approved

THE American Standard Manual of Accident Prevention in Construction, A10.1–1951, has just been approved by the American Standards Association, 70 East 45 Street, New York 17, N. Y. It presents, by illustrations, specifications and simplified text, the safe way of performing construction work and emphasizes the costly results of incorrect, unsafe practices. The manual contains 43 chapters dealing with such subjects as sanitation, first aid, building demolition, electric welding, handling and storage of materials, excavation, explosives, pile driving, scaffolding, power saws, shafts, boilers, temporary electrical installations, fire hazards and prevention, occupational diseases, etc.

The Associated General Contractors of America developed the first edition of this manual 25 years ago, and they have revised it periodically to make sure that it reflects the latest industrial practices. All editions since 1938 have been submitted to ASA for approval as an American Standard. Approval as an American Standard certifies that a consensus of all parties-at-interest has been reached on the provisions of the standard.

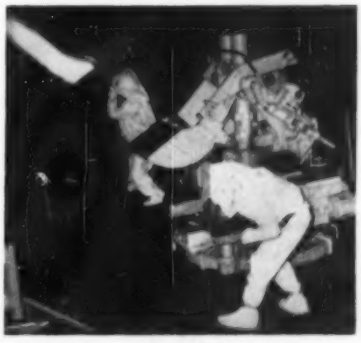
New Safety Appointment

FRED L. BARROWS, assistant manager of the Philadelphia Safety Council of the Chamber of Commerce of Greater Philadelphia, has been appointed executive director of the New Jersey State Safety Council. He will fill the vacancy created by the resignation of Fred M. Rosseland, according to an announcement made by Thomas Roy Jones, president of the State Safety Council.

Barrows attended Drexel Institute of Technology, Philadelphia, specializing in Chemical Engineering. He is a graduate of the Naval Apprentice Engineering School, Philadelphia and spent three years as Safety Engineer at Philadelphia Navy Yard where he conducted training and educational programs in accident prevention for civilian personnel. For the past five years, as assistant manager of the Philadelphia Safety Council, he was responsible for planning and implementing programs in accident and fire prevention in all of the technical and educational aspects affecting those at work, at home and during recreation.

As executive director of the New Jersey State Safety Council, Barrows will supervise the work of the five divisions of the Council and direct the activities of the Council's eleven affiliated Councils in the state.

Protective Equipment for the Armed Forces



NAVY ROCKETMEN—Looking like men from Mars in their asbestos clothing, Navy gunners brace themselves for rocket firing. U. S. Navy Photograph

JET PILOTS have protection for high-speed, high altitude bailouts. A shock-proof visor locks in place and prevents the up-rushing air from tearing the crash helmet and oxygen equipment from the flier's head. U. S. Air Force Photograph

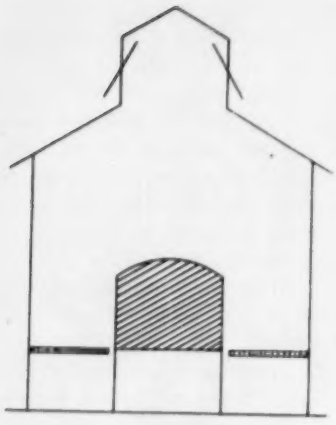


Fig. 1

Typical glass plant with furnace at second floor level. At first, ventilation was provided only by means of open windows in roof.

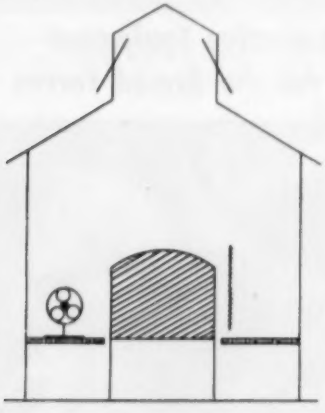


Fig. 2

Later, portable fans gave forced circulation of air. Wavy line at right represents the beginning of opaque shielding, but using materials that were not very effective.

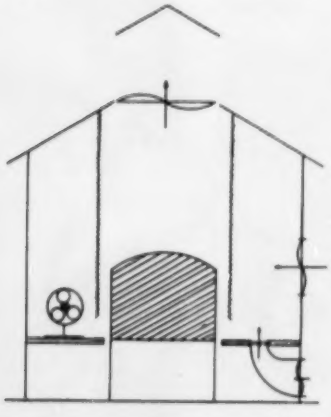


Fig. 3

Present methods of controlling radiant heat include portable fans, fans in walls, radiant shielding of furnace with aluminum sheeting, and power type roof ventilators.

HOW TO CONTROL

Working areas exposed to high-temperature industrial processes need not be intolerable. Modern ventilation and shielding methods can control radiant heat.

UNTIL comparatively recently the high temperature industries have depended almost entirely upon convective or induced convective cooling to promote comfort in the work areas. Although direct radiation from hot surfaces was recognized as a major source of discomfort in the glass plants, only very sketchy work was attempted to reduce the intensity of this radiation. About fifteen years ago it was called to our attention that over 50% of the heat loss from surrounding tank surfaces was in the infrared spectrum. Following this, considerably more attention was given to radiant heat than had previously been given to it, but it was only after the organized study of several large glass industries under the direction of the Industrial Hygiene Foundation in a quantitative determination of heat sources that any real logical engineering work was attempted.

In review, the first thing to be done was to familiarize ourselves with the basic laws of radiant heat. The Stefan-Boltzman equation says simply that the total radiant flux is proportional to the fourth power of the absolute temperature of the radiating source. In other words, assuming we have a furnace operating at 1000° absolute, we find that we have a total radiant flux of gram calories per square centimeter per second of 1.35. If we increase the absolute temperature of this radiating object to 1100°, the temperature increase has been increased by 10%; but the interesting fact, applying the Stefan-Boltzman Law, is that the *radiant flux has increased 44%*. To further illustrate the extreme importance of radiant heat in high temperature industry, if we again increase the temperature to 2000° absolute, we find a temperature increase of 100% and striking increase of radiant flux of 1500%. These simple calculations impressed us and others with the importance that radiant heat plays in discomfort in workers of the high temperature industries.

Suitable Shielding Materials

After this review of the principles of radiant heat, we were then faced with the fact that the problem of heat in our plants and work spaces, if it were largely radiant heat, was one not primarily of convection or thermodynamics but rather one of optics, recognizing that infrared obeys all the optical laws common to visible light. Interposition of opaque objects between the radiating source and the man seemed at first the simplest solution to the radiant heat problem. This is true for short term exposures in which the opaque object does not rise in temperature to that of the surroundings. If the opaque shield is of high emissivity or conversely of high absorptivity, the opaque screen eventually will arrive at a temperature where it begins to reradiate itself, and if the shield or screen is closer to the man than the original

RADIANT HEAT

By KARL L. DUNN
Corning Glass Works
Corning, N. Y.

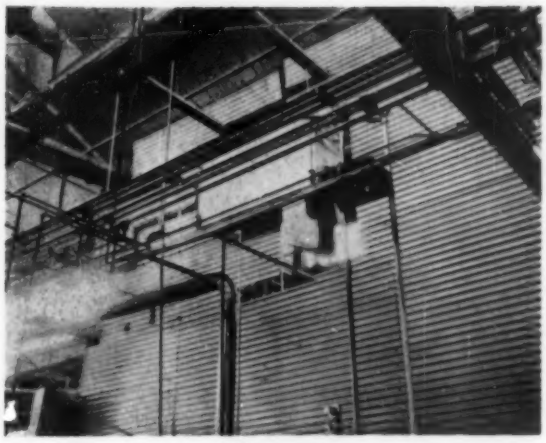


Figure 4

Corrugated aluminum shield around furnace extends to the roof.

radiating object, merely serves to intensify the problem. It seems then, that the correct approach to this problem of materials for opaque shields was to select an economic material which had an emissivity low for the infrared and high in reflectivity.

Table I represents a list of common metallic materials adapted from National Bureau of Standards Reports. It can be seen that most of the metals have a high reflectivity to the wave length 2.0 microns which was selected as being about median in the temperature range that we were experiencing in the high temperature locations. Materials such as gold, silver and platinum were immediately abandoned because of the cost angle. Aluminum seemed, after an exhaustive search of materials, to be the ideal material to use for several reasons, the major one being the fact that aluminum oxidizes very slowly and the thin oxide coat retains most of the initial reflectivity.

Included in this Table are three materials that commonly might be thought to have high reflectivity or high value for opaque shields. Aluminum paint, it can be seen, is only about 50% reflective and was abandoned early in this study as a material suitable for reflective shields. Asbestos paper is extremely low, having its value primarily as an insulating material in convective heat problems. White paint, illustrated here by white lacquer, again has an extremely low reflectivity to the infrared, and conversely these three materials would have a high absorptivity to the infrared and, in a short time, after being exposed to high radiant sources would tend to reradiate.

Ventilation in Glass Trade

After considering this problem theoretically, we then decided to review the entire heat problem as far as the glass trade was concerned. The three accompanying line drawings illustrate the various steps through which we have passed in the glass trade in coping with the heat problem. Figure 1 represents the typical glass plant. A centrally located furnace supported upon pylons at the second floor level has as its only means of losing heat direct radiation and air flow or convective flow through an annular space which extends around the periphery of the furnace. The roof is constructed in a simple monitor form, allowing the heat and generated gases to escape by gravity from the open windows. For a great many years this was the only system used and the only one we could depend upon for cooling air within the plant walls themselves.

The line drawing labeled Figure 2 represents the next stage in which portable fans were used to circulate the air to keep the air in motion around and about the work spaces. On the right side of the drawing can be seen a wavy line representing the beginnings of opaque shielding. Materials such as wood, asbestos board, black iron, etc., were used in these locations. A great disadvantage of the portable fan in these locations was the fact that it did tend to circulate air over the hot surfaces and

(Continued page 43)

TABLE I

PERCENTAGE REFLECTION OF VARIOUS POLISHED METALS AT WAVELENGTH 2 MICRONS

Antimony	60	Silver	97.8
Bronze	80	Speculum	80.4
Copper	95.5	Steel	76.7
Gold	96.8	Tungsten	85
Iron	78	Aluminum	92
Magnesium	77	Tin	61
Nickel	83.5	Zinc	92
Platinum	80.6	Asbestos paper	5–10
Aluminum paint	50	White lacquer	5–10

Fully protected against oxygen-deficient atmospheres for at least forty-five minutes, these three members of a rescue squad are wearing self-contained oxygen breathing apparatus. A warning bell notifies the wearer when he should return to the fresh air.

SAVING THE LIVES OF

To be ready for many types of emergencies, rescue squads should have suitable respiratory protective devices.

EQUIPPED with, and thoroughly trained in the use of, modern protective and safety equipment, members of the First Aid and Rescue Squads of the Cleveland, Ohio, Fire Department have made for themselves an enviable reputation for prompt, intelligent action whenever called upon. Their response is not confined to the answer of regular alarms. Each year, in the quarter of a century that has passed since the Squads were given a separate entity within the Department, has seen them summoned to emergency calls with increasing frequency. During 1950, for instance, the three Rescue Squads that cover the city responded to a total of 2,772 "regular" alarms, and went out on a total of 1,257 "emergency" calls. This compares with answering 2,622 "regular" and 1,098 "emergency" calls during the preceding year.

All squads operate under the Bureau of First Aid & Rescue Service, commanded by Captain Charles G. Eisenhart, himself a veteran fireman. He reports directly to Elmer M. Cain, who has been Chief of the Cleveland Fire Department since 1949. Chief Cain is a firm believer in the work of the Bureau, holding that the protection of human life ranks in importance with protection of property at a fire—and in fact comes first. To this end he has insisted that the men of the Bureau be provided with only time-tested and service-proved equipment, and that they be thoroughly trained in all the uses of the devices.

Rescue Squad #1 is located in downtown Cleveland; Squad #2 covers the West End, and Squad #3 the East End of the city. Each Squad has its own rescue car. The squads and cars respond not only to certain mandatory and multiple alarms but also to emergency alarms, often when no other fire apparatus is called out.

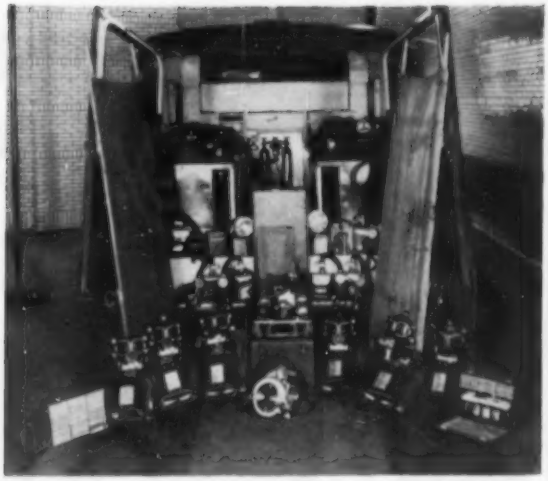
A variety of safety and first aid equipment is carried in each rescue car. This enables members of the squads to cope with almost any situation requiring safety or first aid measures. In addition to being provided with portable inhalation equipment, each of the mobile "rescue wagons" is equipped with a dual-equipped built-in inhalator, for the separate and simultaneous treatment of two patients. This inhalator is located on a panel at the far end of the car's interior. Both the portable and built-in inhalators are used to treat victims of carbon monoxide poisoning, gas asphyxia, drowning, electric shocks and other causes of respiratory failure.

Self-Contained Breathing Apparatus

A new item of equipment carried in the cars, and one which is highly regarded by Chief Cain and Capt. Eisenhart, is the self-contained oxygen breathing apparatus. This

Members of the First Aid & Rescue Squads not only know how to fight fires but also to save lives. In this demonstration, they work on "victim" with inhalator.

LIFE-SAVERS



Displayed in the picture above is the standard first aid and rescue equipment carried in each of the rescue cars of the Cleveland Fire Department. Included in the front row are six self-contained breathing apparatus and a portable inhalator (center of front row). Flanking each side of the front row are shown first aid kits, the one to the right being a special burn-treatment kit. On the steps of the rescue car are the six gas masks, with a carbon monoxide indicator on the top step at right. Firemen's helmets, electric lights and stretchers comprise the rest of the portable equipment. At the far end of the rescue car can be seen the built-in, dual equipped inhalator.

is a combination of a rubber face mask fitted with wide vision lenses, to which is attached breathing tubes leading to a replaceable, chemical-filled canister. These in turn open into a breathing bag. Moisture in the exhaled breath activates the chemical (potassium tetraoxide) in the canister, evolving a plentiful supply of oxygen for the wearer's breathing requirements. The chemical, while generating oxygen, also absorbs exhaled carbon dioxide and

Refrigerator leaks are responsible for about 10 per cent of all emergency calls. The universal gas masks are each equipped with a canister which has a special type filter to protect against toxic dusts, mists, fogs, and smokes, and also carbon monoxide.

moisture. The evolvement of oxygen is in accordance with the breathing rate of the wearer. An automatic timing device rings a bell at the end of 45 minutes, warning the wearer that he should return to fresh air for canister replacement.

Six of these oxygen-supplying devices are carried on each of the rescue cars, one for each squad member, while nine spares are carried by the Bureau. At the time of a recent interview with Capt. Eisenhart on the work of his Bureau, the units were being fitted with speaking diaphragms. These permit the wearers to transmit speech naturally without distortion, assuring communication between wearers without having to remove the face piece, or otherwise exposing themselves to gas- or smoke-filled atmospheres.

Gas Masks

Each rescue car also carries six U. S. Bureau of Mines-approved gas masks, each equipped with canisters that contain special filters for protection against toxic dusts, mists, fogs and smokes, and also against carbon monoxide. Each of the six masks is carried in an "alert position" in the rescue car, ready for instant donning. Each mask also is fitted with an automatic timer which indicates to the wearer the service time of the canister. Such canisters are replaced immediately after each use so that the men do not run the risk of being caught with a partially depleted canister

A Rescue Squad-man, wearing a universal gas mask, tests the atmosphere around a water heater with a carbon monoxide detector. The squads still make hundreds of emergency calls a year, only to find one or more persons overcome by carbon monoxide, an odorless, colorless and tasteless gas, which is formed by incomplete combustion.

when using a mask. The exhausted canisters are destroyed immediately upon replacement so as to prevent the accidental use of an "empty."

In discussing the use of some of the equipment with which his men are supplied, Capt. Eisenhart recalled one particularly bad fire that

FEATURE

This is the second of a series of three feature articles on Respiratory Protection. The next article of the series will appear in the March issue of SAFETY MAINTENANCE & PRODUCTION.

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broke out in a fur-filled vault late one spring night. At the time of this fire only a few of the gas masks had been received. The two Squads at the fire had not received the new units as yet, and were being forced to work in brief relays in attacking the fire.

There was dense smoke in the vault, impenetrable by any available light, and there was a high concentration of water vapor. Capt. Eisenhart, together with a couple of his men, equipped themselves with masks and carried lines into the vault. At the same time he ordered that all available masks and their canisters be made available to other firemen.

"We worked on that blaze with these new masks for seven-and-a-half hours," Capt. Eisenhart said. "We used more than 100 canisters among eight men, but we were able to locate the heart of the fire. It was that night's work that demonstrated to the members of the department the value of the masks and the canisters.

The oxygen-generating apparatus has also proved its worth. Capt. Eisenhart explains, "We were out early one morning working on a fire in the storage basement of a garage. There had been a gasoline explosion and there not only was considerable heat but there was dense smoke and extremely high humidity.

"A call was put in for an extra Rescue Squad and we worked seven men. All wore the breathing apparatus and were in the heart of the blaze for about 15 minutes. We worked it first with two 2½-in. lines, and later with two 1½-inchers.

"Three of the seven men we sent in had never used the breathing apparatus at a real fire, their only experience with them being in 'dry runs' in training at quarters. These three men also had had less than a year's service in the Department but their response to the use of this equipment under actual service conditions was very good."

Other equipment carried on the rescue cars consists of carbon monoxide detectors, first aid kits and supplies of a product for the treatment of burns. Also carried is the usual assortment of short ladders, axes, blankets, stretchers, crowbars and pries.

Some idea of the work done by the Rescue Squads during the course of a year was given by Capt. Eisenhart from the Bureau's records for 1950. During that year Squad #1 went out on a total of 688 regular alarms, working 261¾ hours, and to a total of 247 "emergency" alarms. Squad #2 answered 717 alarms for 329 hours, and 424 emergencies, while Squad #3 went out on 1,367 alarms for a total of 433 hours, and 586 emergency calls.

First aid treatment was administered for a total of 643 times by all squads. This included the use of inhalators on 414 occasions for a total of 206 hours, with the use of cylinders (which contain a mixture of 93% oxygen—7% carbon dioxide) for 202¾ hours. Prone resuscitation methods were applied on 124 occasions for a total of 49¾ hours.

The list of "Fatals and Recovered" showed that during 1950 in asphyxiation cases, 16 persons were treated, all recovering. Of four suffocation cases—mostly those of children smothered by bed-clothing—there were three recoveries and one fatality. In "Miscellaneous" cases, there were 294 persons who received treatment. All but 44 recovered.

It was interesting to note that during 1950 the Rescue Squads were called out to treat persons in 132 cases of heart attack and that their prompt attention and treatment aided in the recovery of all persons. In the 73 cases of heart failure, however, all were reported as "Fatals." There were six calls to treat people with pneumonia, with five "Recoveries" reported and in a similar number of calls to treat victims of poisoning, all likewise were marked as recovered.

Pictures by courtesy of Mine Safety Appliances Co.

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Maintenance Show

(Continued from page 13)

of three can lay almost a mile of it in one day, according to the manufacturer.

The roofing season is going to be extended throughout the entire year by a new roof coating which can be applied directly over a wet roof. The manufacturer claims it can seal leaks and patch a roof even in a driving rainstorm. Also in the painting line is a new formula paint which will resist heavy stains like machine grease. The manufacturer says even lipstick can be washed right off, but who wants to go around kissing factory walls?

New Safety Jacket

Newest in the safety field is an aluminum-foil jacket which is not only fire-resistant but also has a polished surface which reflects heat right back into the furnace. Comfortable working conditions were maintained in tests up to two thousand degrees Fahrenheit. The new cloth may also be used for curtain and drape materials where heat resistance is important.

Ainsworth to Head Museum of Safety

CYRIL AINSWORTH, technical director and assistant secretary of the American Standards Association has been elected president of the American Museum of Safety. Mr. Ainsworth will be the fifth president of the Museum—the oldest safety organization in the country.

Mr. Ainsworth has taken active leadership in ASA's safety program since 1931. The American Safety Standards developed under the procedures of the American Standards Association are used as a basis for uniform state and local safety regulations all over the U. S. They represent the work of safety engineers in all branches of American industry, technology and government.

In 1935 Mr. Ainsworth helped organize the Greater New York Safety Council. He is the U. S. member of the International Accident Prevention Committee, International Labor Office and is also secretary and a director of the Greater New York Safety Council as well as a trustee of the American Museum of Safety.

The American Museum of Safety is one of the nation's foremost organizations for the prevention of accidents in all fields. Through financial grants, scholarships, and underwriting the Museum stimulates special studies, and initiation and evaluation of programs on the determination of the causes and prevention of accidents. Each year the Museum presents the Harriman Medals for railroad safety and the Arthur J. Williams Memorial Award for an outstanding contribution to the conservation of human life.

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Plant Fire Control

TWO thousand employees of Raytheon Manufacturing Company in Waltham and Newton, Mass., have undergone training in plant evacuation and damage control under a program which was inaugurated several months ago.

The program, initiated by Raytheon as a means of safeguarding employees and protecting plant property in the event of a major fire or other emergency, is considered one of the most comprehensive projects of its kind in industry. Under the plan, procedures have been set up for rescuing the injured, administering first aid, combating fire, controlling damage, and establishing fire prevention methods.

The complexities of developing a plan to fit the needs of individual plant conditions, while retaining the essential uniformity of an over-all program, have been considerable in view of the company's multiple plant operation and the large number of employees involved. A plant evacuation and damage control committee has been appointed at each of the company's locations to work out details of the program and to set up the necessary organization. Floor plans have been drawn up for the purpose of indicating fire exits in the plants, evacuation routes and alternate routes, the locations of fire-fighting equipment, and other essential information. All plants have been equipped with a standard fire alarm system and an evacuation alarm. A 200,000-gallon auxiliary water supply for the plant sprinkler system—capable of operating independently of the city water supply—has been installed at the company's Waltham plant.

Under the plan, which is being coordinated with the procedures of the company's full-time fire-fighting department, each employee in the emergency fire brigade is being given 10 to 20 hours of intensive training under professional supervision.

Spontaneous Combustion

(Continued from page 14)

reau of Standards to investigate whether self-heating in the interior of wood fiberboard could be carried to such an extent as to cause the material to ignite.

Mr. A. C. Hutton and Mr. D. Gross of the NBS Fire Protection Section developed equipment and methods for studying self-heating characteristics over a wide range of size and temperature conditions. Boards cut octagonally were stacked in depths equal to the width of the octagon. These were introduced into a suitable oven or furnace and held at constant ambient temperature until the peak of self-heating was passed or until the self-heating had resulted in ignition. Series of increasing ambient temperatures were used until the lowest ambient temperature at which ignition would occur was found.

Volume of Material Important Factor

The initial tests were made on wood fiberboard specimens .01 to 12 inches in diameter. The larger

the volume of the specimen, the greater is the self-heating temperature rise within the specimen for a given ambient temperature and the lower is the external temperature required to initiate combustion. Ignition was found to start at the geometrical center of the specimen and spread outward through the remainder of the material.

Data were also obtained on cane fiberboards, felted cotton linters (alpha cellulose), Douglas fir, crushed coal, and alfalfa hay. For the cellulose-type materials so far tested, the lowest ambient temperatures that cause ignition fall within a range of 50 degrees F for a given sample size, but the times required to reach ignition vary widely. Thus, a 2-inch sample of wood fiberboard at 356°F ignites in 18 minutes, while a 2-inch sample of felted cotton fiber ignites at 394°F after 63 hours. When the ambient temperature is allowed to rise with the self-heating of the specimen rather than being kept constant, ignition is accelerated.

For a given material, the logarithm of the ignition temperature was found to vary inversely as the logarithm of the specimen size. It appears probable that extremely large volumes of fibrous materials will ignite at relatively low ambient temperatures and that a potential fire hazard exists in the transportation and storage of these materials—in particular, immediately after hot processing and drying. More effective control of shipping and storing temperature and of stack size is therefore recommended to reduce the probability of ignition due to self-heating.

Pictures by courtesy of the National Bureau of Standards.

Safe Crossings for Conveyors

(Continued from page 27)

who is working on the problem of conveyor cross-traffic measure his ingenuity by these standards:

(1) Is the arrangement foolproof—against power failure, careless employees, slipping, inattention, or oversight by maintenance personnel?

(2) Is the design adequate to the load to be carried on the conveyor and to the stability of that load on the conveyor?

(3) Is the design appropriate to the frequency of the usage? Is it too fancy an arrangement for infrequent use, or too awkward an arrangement for constant use?

(4) To what degree does cross-traffic interfere with the normal flow (and the peak flow) of goods over the conveyor lines?

(5) Is it the most practical arrangement which will serve the purpose?

(6) Will it be appreciated by the workers in the area?

These are factors beyond mere mechanical suitability. But they are factors which influence operating usefulness, operating efficiency and plant safety.

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TRANSPORTATION

Rock Salt Boxes for the Public

TO HELP them get a quick start on snow and ice removal work many commissioners put boxes of coarse rock salt at strategic intersections and hills throughout the city and invite motorists, service station attendants and others to spread the rock salt on danger spots until the regular crews come along.

The idea, tried out in Pittsburgh last winter, worked very well there, according to Public Works Director James S. Devlin. "The boxes are a big help," he said. "It's a lot faster than waiting for trucks to make the rounds, and it also keeps expenses down." By spreading rock salt as soon as a snow or sleet storm starts, it's always less expensive to keep streets snow and ice free, because the rock salt prevents the fall from packing and freezing to the streets. Many other cities use rock salt boxes in this way, and in every instance they have been extremely valuable in assisting the work of the regular snow removal crews and of providing emergency service for danger spots along the streets.

In addition to putting out the boxes and keeping them filled, Mr. Devlin explained that it is important to keep telling the public, through stories in local papers, that the rock salt is there for their use. Otherwise, many people think that the rock salt boxes are maintained for the regular snow removal crews and do nothing about spreading coarse rock salt themselves as they need it.

Race Macabre

THE automobile will outpace war as a mass killer of Americans sometime in February, when its fatality toll will exceed for the first time in history the total of the nation's military dead since 1775, unless there is a marked decline in traffic deaths and Korean casualties increase greatly in the meantime, the Association of Casualty and Surety Companies said.

At the end of the first year and a half of the Korean conflict on December 25, military deaths in all U. S. wars since the Revolution started had reached approximately 1,004,000, according to the Association's comparative study of war and traffic fatalities. The automobile killed its millionth victim on December 22. Its toll on Christmas Day, when the Korean war was 18 months old, was approximately 500 over that historic mark, 3,500 below the all-time total of war deaths but 56,500 higher than the tally of 944,000 motor vehicle fatalities at the start of the Korean war on June 25, 1950. In the same 18 months the Department of Defense has reported about 17,800 U. S. military deaths in Korea.

Barring resumption of full-scale war and far greater American casualties in Korea or a huge reduction in the motor vehicle toll, the automobile will soon overcome war's head start of 125 years in which 530,000 military deaths had occurred before the motor age claimed its first victim just before the twentieth century began. At the 18-month mark of Korean hostilities, traffic fatalities were occurring seven times faster than those of war, claiming in one day as many American lives as the total lost in one week's fighting in Korea.

GI-X

The historic death race between these two mass killers toward their respective million marks ended with war claiming the life of a new unknown soldier, "GI-X," in Korea last September 3 or 4, according to the Association's study. His civilian counterpart in traffic accidents, "Victim X," died about 110 days later. The deaths of these historic victims of war and the automobile a little more than three and a half months apart have centered attention on the relative deadliness of occasional American wars and daily traffic accidents, the Association said in pointing out that within two months the automobile will take a commanding lead as the deadlier of the two wholesale destroyers of American lives.

Big Killer

"Americans must face the fact that the automobile is a bigger killer of their sons and daughters than our wars," said Thomas N. Boate, public safety director of the Association and acting manager of its accident prevention department, in commenting on the study. "The new year should witness the most determined effort ever made by the nation to reduce the tremendous loss of life in highway accidents."

The study showed that while U. S. military deaths climbed from 986,247 at the start of the Korean war to approximately 1,004,000 as of Christmas Day, in the same 18-month period traffic fatalities rose at a three times swifter pace, from 944,000 to the 1,000,000 mark reached on December 22.

During January of last year 2,840 deaths occurred on the highways, a 20 percent increase over the previous January, and 2,260 persons died in accidents in February. If these tolls are exceeded in the early weeks of this year, by mid-February or soon afterwards the all-time total of automobile deaths will exceed the aggregate of the nation's military deaths for the first time.

SAFETY

How to Prevent Skid-Wrecks

Research Provides Reliable Tips. May Save Your Life.

THE National Safety Council warns motorists that the war-born use of cold synthetic rubber in most tires now being produced has increased the danger of skidding because of less effective stop-and-go traction ability on snow and ice.

As an early winter battered much of the nation, the Council said exhaustive winter driving tests conducted last winter at Clintonville, Wis., had proved the need for motorists to drive more cautiously with synthetic tires.

Prof. A. H. Easton, director of the University of Wisconsin's truck research project and chairman of tests for the Council's Committee on Winter Driving Hazards, was technical supervisor of the latest series of experiments on stopping and traction abilities of various types of tires and tire chains on hard-packed snow. Similar tests had been made previously on glare ice and loose snow.

Natural rubber tires, manufactured before defense requirements forced tire companies into using more synthetic rubber, were 8 per cent superior to similar present day synthetic tires in stopping on hard-packed snow and 47 per cent better in traction ability. On glare ice, natural rubber treads were 10 per cent better in stopping ability and 16 per cent better in traction ability.

It was pointed out, however, that synthetic tires wear better, perform normally on dry or wet pavements and have other advantages.

The tests indicated that on snow and ice even the specialized winter tires now appearing on the market showed relatively little overall improvement over conventional tires in comparison with the stopping and traction ability possible by using reinforced tire chains, Prof. Easton said.

Caution Required

The test report defined three types of special winter tires: "winterized" tires of conventional tread containing embedded materials or fine lacerations and cuts; "mud-snow" tires characterized by a deep tread pattern or lug design; "winterized mud-snow" tires combining deep tread with the lacerating treatment.

"While the performance of several specialized tires shows definite improvement for specific conditions over conventional tires, their overall improvement is not great enough to warrant less care of precaution when driving on slippery surfaces," Prof. Easton warned.

"As an example, the stopping distance on glare ice of the best specialized tire tested is still about eight times the normal stopping distance on dry concrete. Several of the specialized tires, although showing some improvement under specific conditions, are no better, and in some cases even worse, than the conventional tread tires under other conditions.

"As a corollary to the above,"

SIX TIPS FOR WINTER DRIVING

1. Get the "feel" of the road by trying your brakes while driving slowly and when no other vehicles are near.

2. Adjust your speed to road and weather conditions. Realize that synthetic tires skid and spin more on snow and ice than pre-war tires, although cold synthetic rubber wears better and performs normally on wet or dry pavements. But slow down on snowy or icy roads so you can stop when you have to.

3. Use tire chains for severe snow or ice conditions. They cut braking distances on cars and trucks 40 to 70 per cent and provide needed stop-and-go traction. Even with definite help of chains, careful driving is necessary.

4. Follow other vehicles at a safe distance. Remember that, without chains, it takes from 3 to 12 times as far to stop on snow and ice as on dry concrete.

5. When you have to stop, pump your brakes up and down —jamming them on may lock the wheels and throw your car into a skid.

6. Keep your windshield and windows clear of snow and ice, fog and frost. Be sure your headlights, windshield-wiper blades, and defrosters are in good working order. You must see danger to avoid it.

I KNOW I'M SAFE...
with WOODEN SOLES!
Wooden Soles Insulate
Strong steel toe
FOR THE FACTORY...
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Wear a Reece "Strong Toe." Comfortable leather uppers. High, roomy steel toe protector, heat-resistant wooden sole. Have comfort-safe feet at work in oil refineries, foundries, steel mills, factories.
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...FOR THE FOUNDRY
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The Reece "Hot Foot" sandals. Protect your feet in furnace and coke oven rooms. Straps on over your own shoes. Heat resistant wooden sole, strong galvanized iron counter, flexible hinge toe. Cannot slip. Write to-day.
BE SAFE THE REECE WAY. . . WITH A REECE "HOT FOOT" SANDAL!
There is no substitute for Reece Wooden soles
REECE WOODEN SOLE SHOE CO.
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Prof. Easton said, "it seems evident that the basic recommendations of the committee are still applicable. These recommendations are: (1) get the 'feel' of the road; (2) adjust speed to road and weather conditions; (3) use tire chains for severe snow and ice conditions; (4) pump the brakes to stop; (5) follow other vehicles at a safe distance and (6) keep the windshield and windows clear."

On the basis of stopping and traction tests conducted during January of last year of representative specialized tires on the rear wheels only, the most significant findings, Prof. Easton said, were:

1. Stopping distances with conventional tires on hard-packed snow were about three times the normal stopping distance on dry concrete. With the best of the specialized tires, stopping distances on packed snow were about two and one-half times the dry concrete distances, and with reinforced type tire chains stopping distances on packed snow were nearly twice that obtained on dry concrete.

2. "Winterized" tires offered an average improvement of about 5 per cent in stopping ability on hard-packed snow, but their traction ability was 10 per cent less than conventional tread natural rubber tires.

3. Tires of the "mud-snow" type reduced stopping distances on hard-packed snow an average of 13 per cent compared with conventional tread natural rubber tires. In traction ability, one of the tires of this group showed an increase of 47 per cent over conventional tires, whereas the other showed an improvement of only 1 per cent.

4. "Winterized mud-snow" tires showed an average improvement of 17 per cent in stopping ability, and 19 per cent in traction ability on hard-packed snow compared with conventional tread natural rubber tires.

Chains Needed

"Reinforced tire chains are far superior to the best of the tires tested," said Prof. Easton, "both in stopping and tractive ability on hard-packed snow. They showed an improvement over conventional tread natural rubber tires of 39 per cent in stopping ability, and 273 per cent in traction ability. On glare ice their improvement averaged 56 per cent for stopping and about 650 per cent for traction ability or grade climbing."

With reinforced chains, the tests revealed, a car can climb a grade of about 23 per cent on ice or snow, while the best of the special winter tires can negotiate only a 4 per cent grade on glare ice, and an 8 per cent grade on hard-packed snow.

The Council committee, made up of public safety officials, automotive and tire engineers, insurance men and fleet owners, scientific research men and traffic safety educators, also made the following recommendation in its report:

Please use # O-23 for further details.

this HILLYARD TREATED floor
Detours Danger
* Asphalt Tile floor sealed with Hillyard HIL-TEX, finished with HILCO-LUSTRE, the surface safeguard.
The safer Hillyard treatment in any plant pays for itself by eliminating slipping or fire hazards and by giving longer wear. Offers protective sealing and finishing against hazardous grease and soil wastes. Simple cleaning keeps it spotless and attractive. Only Hillyard floor treatments have the combination tested safety and specialized features that assure savings in maintenance time up to 50%. And properly finished Hillyard floors won't warp, darken, splinter under heavy trucking, or crack.
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* If you're having any type of floor cleaning, treating or maintenance problem, consult the Hillyard Maintaineer (floor expert) near you for free technical information and help, or write Hillyard, St. Joseph, Missouri.
St. Joseph
Missouri
Branches in Principal Cities
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"In view of the serious consequences often resulting from exaggerated claims for the performance of any product when traffic safety is involved, it is important that extreme care be used in all publicity to avoid misleading statements."

Expansion Program

FINE Organics, Inc., according to Nicholas M. Molnar, president, has approved plans to enlarge buildings to house increased laboratory and production facilities at the Lodi, N. J. plant. Research contracts from military services together with rapidly expanding requirements of the company's Aviation-Industrial Chemicals Division have made additional facilities urgently necessary.

Additional process equipment orders have been placed, also, to enlarge the company's capacity to produce intermediate chemicals, pharmaceuticals and fine organics.

Brewer-Titchener Elects

MR. JAMES H. GREENE has been elected president of the Brewer-Titchener Corporation, Cortland, N. Y. Greene's election was announced by E. S. Brewer, chairman of the company's board of directors. In his new position, Greene will direct the 130-year-old firm's diversified manufacturing operations which are carried on in two Cortland plants, two Binghamton, N. Y., plants and a plant at New Milford, Pa.

A graduate of Cornell University, class of 1916, Greene joined The Brewer-Titchener Corporation in 1919 and became general manager of the company's Cortland Forging Division in 1930. In 1949, he was made a vice-president of the firm among whose products are safety hoist hooks, and served in this capacity until his new appointment was made known. He also is current president of The Drop Forging Association.

Radiant Heat

(Continued from page 33)

multiply the problem in hot weather by recirculating and moving the super-heated air over the workmen. The furnace continued to radiate to the steel structures and building walls. No provision was made for air supply from the basement or within the work space. The monitor remained in its conventional form dependent entirely upon gravity for removal of heat and gases from the furnace itself. This figure represents the condition that existed until a few short years ago in most of our plants.

Radiant Shielding

The line drawing Figure 3 represents the application of the present knowledge of radiant heat. We continued to use the circulating fans in the space surrounding the furnace. Added to that were several sources of forced air supply through the floor in the workspace. In addition fans

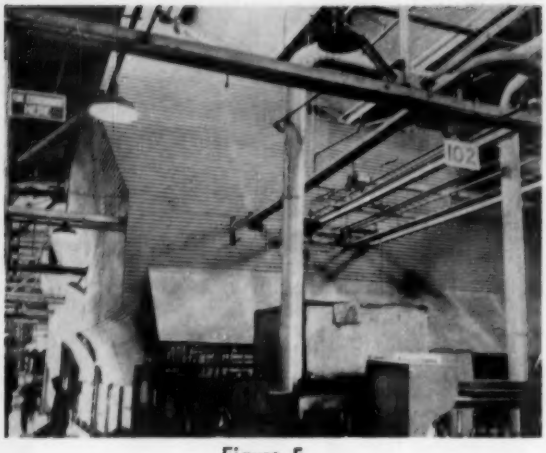


Figure 5

Employees are shielded against radiant heat from an annealing oven by an enclosure. Tilted hoods cover openings for materials.

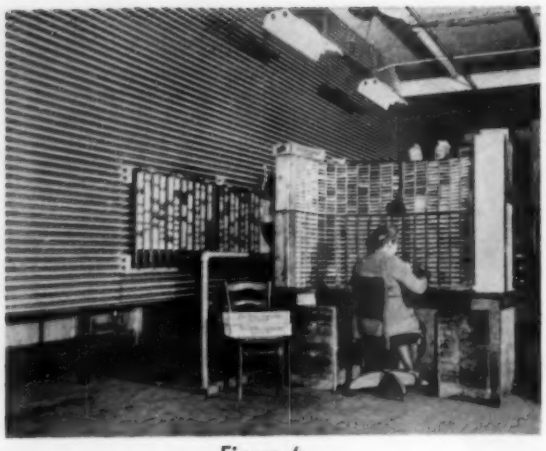


Figure 6

Before installation of aluminum wall, this area was subject to intense heat. It now is comfortable and used for timekeeping.

were placed in the walls of the building to produce a positive pressure within the building walls. Radiant shielding was installed by dropping corrugated aluminum sheeting from the roof level to within three feet of the floor and an extended hood type structure completely surrounding the furnace or hot object.

To assure ourselves that positive flow would take place behind this shield, in some cases we have installed power type roof ventilators commonly used in the foundry trade. The curtain or shield surounding the furnace serves two distinct purposes. It keeps the radiant energy entirely confined to a central area. The infrared cannot escape to be absorbed by the steel of the structural parts of the building which in turn might become a secondary radiant. Generated gases stay within the structure and do not escape into the workspace. We are sure that the temperature on the outside of these shields will remain within a few degrees of that of the outdoor temperature. Circulating fans remain to assure ourselves that the air will remain uniform in temperature throughout the work areas.

While this installation may not be a profound one engineering-wise, the accompanying photographs will illustrate an actual installation using this principle in which very effective results were obtained over one very hot summer. A light steel framework was erected entirely around the hot furnace. Corrugated aluminum was attached directly to this light structure by means of a blank cartridge actuated nailing device. In this way we were able to erect the entire shield in a comparatively short time. Figure 4 illustrates the point that we did erect the shields to the roof level, allowing only very small openings for piping, electrical services and the necessary structural steel work.

Figure 5 is as near a view as can be obtained of the entire structure surrounding one large heated area. Within the enclosure is a continuous type lehr or annealing oven. Openings at both ends were necessary to allow the continuous flow of materials. These openings were covered by a tilted hood type structure. Access openings along the sides of this annealing lehr were provided with overhead garage doors constructed of corrugated aluminum. The size of the structure can be estimated by the silhouette of the man standing in the extreme lower left hand corner.

Figure 6 illustrates better than any quantitative measurements the effectiveness of this type installation. Here we see an area in use as a timekeeper's desk which was previously an intolerable area. In the lower left of the picture may be seen the fire box of the annealing lehr directly on the other side of the corrugated aluminum shield. The low emissivity of the aluminum in this location is best illustrated by the fact that the time card rack is attached directly to it.

Please use # O-25 for further details.

From an address presented at the Chemical Engineering Conference of the 15th Annual Meeting of the Industrial Hygiene Foundation.
Pictures by courtesy of Corning Glass Works.

Oil Safety Experts Honored by A. P. I.

THE Safety Committee of the Board of Directors of the American Petroleum Institute presented "Certificates of Appreciation" to three safety experts in recognition of their many contributions to the development of the industry's safety program. The citations were presented at a group session on the Protection of Petroleum Facilities, during the Institute's annual meeting in Chicago.

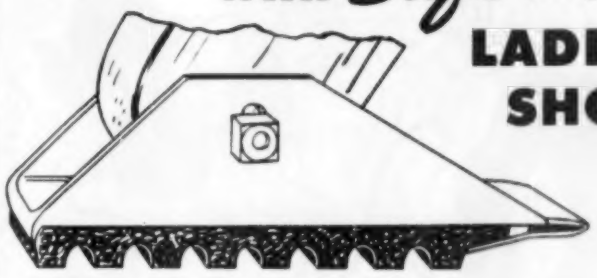
Recipients of the awards were:

Joseph C. Bernd, retired (formerly with Sinclair Refining Co., East Chicago, Ind.)—for 20 years of tireless service as chairman and member of accident-prevention committees, and especially for his notable contributions in the preparation of API accident-prevention manuals.

Roy S. Bonsib, retired (formerly with Standard Oil Co., New Jersey)—for seven years of conscientious service as chairman and member of accident-prevention committees.

C. Elmer Townsend, retired (formerly with Sun Oil Co., Philadelphia)—for service as chairman and member of fire-protection committees, who for 22 years rendered outstanding service to the Institute, notably in the protection of the petroleum industry against unnecessarily restrictive fire-protection laws and regulations, and especially for his effective representation of the Institute on the Committee on Flammable Liquids of the National Fire Protection Association.

Safe WORK with Safe-Hi LADDER SHOES



Ladders were made to lean, and leaning ladders tend to slip. Attach Safe-Hi Ladder Shoes and work safely—at any height.

SAFE-HI

Ladder Shoes have a four-way grip:

1. Rubber tread holds on any dry surface.
2. Cord filling in tread grips wet or oily surface on which rubber will slip.
3. Ridges across the line of slippage, get a firm hold on the surface.
4. Self-sharpening spike for ice or snow.

Spike walls of soft steel welded to a core of hard tool steel wear away first, making Safe-Hi Shoe Spikes self-sharpening. Fit *all* your ladders with SAFE-HI LADDER SHOES.

See your safety dealer or write

SPECIFY Safe-Hi PRODUCTS and get that extra safety margin

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730 Club Bldg., Denver, Colo.

• SAFETY BELTS • LADDER SHOES
• POLE GRIPS • WALL GRIPS • CHISEL GRIPS
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Please use 8 O-26 for further details.

Concrete "Dust"

(Continued from page 23)

dusting. Not only that, this method of treatment prevents chipping and fortifies the floor against all kinds of wear. It also prevents moisture from penetrating the floor surface, and makes the floor impervious to alkalies, grease, acids, etc. It's important, too, that the floor is now easier to keep clean and sanitary.

Sweeping time has been cut considerably because dirt doesn't stick to the hard smooth finish. Rather, it sweeps up readily and therefore is never left to become caked and beaten into the pores of the concrete. Also, with less dust being raised, the sweeping job can be accomplished in a much shorter time. We vacuum our spice and baking powder rooms because of the extremely fine dust in these areas.

We wet-mop all our concrete floors once or twice a week, depending on the amount of traffic they receive. We buff them once a month with a fine steel wool disc under a rotary type floor machine. This practice loosens any stubborn soilage and restores the floor's finish.

Since the initial treatment with concrete preserver was given our floors, we have found that most areas require another coat only once a year. Traffic lanes, however, where ton-and-a-half steel-wheeled trucks rumble day in and day out, get it

NO! CURLEY.. YOU DON'T HAVE TO BUMP THAT EXTINGUISHER!

To operate an Ansul Dry Chemical Fire Extinguisher you simply remove ring pin, push down puncture lever and squeeze nozzle. No bumping is necessary for mechanical breakage of the dry chemical. When Ansul Extinguishers are pressurized, the jet of high pressure gas instantly fluidizes Ansul *"PLUS-FIFTY"*® Dry Chemical.

You want properly designed fire extinguishers . . . designed for maximum effectiveness by inexperienced operators, designed for quick, on-the-spot recharge (no tools needed), designed for easy, economical maintenance. . . . You get all this with Ansul Extinguishers. In addition, you get the best fire extinguishing equipment capable engineers can design and a modern plant can manufacture.

SEE PAGE 11

(Advertisement)

every six months. The fact that with this preserver you can "patch" worn areas without showing overlap is a splendid feature. This feature offers another convenience in that it allows us to split our longer traffic lanes down the middle treating half at a time without showing a line. We do it this way so that the lanes never have to be entirely shut off.

Our concrete floors are subjected to many and varied conditions, with every section of our plant presenting different floor problems. However, we believe we have found the answer to all-around, better conditioned floors in the use of a surface-sealing concrete preserver. We have not only licked the dust problem, but our floors are more attractive and are standing up better under the rigorous traffic they get every day. If this continues, our repairs and replacements will be practically nonexistent.

Picture by courtesy of Multi-Clean Products, Inc.

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Linemen's Safety

(Continued from page 17)

ment should remember that "Men are seldom killed by deliberately handling known energized wires barehanded. They are killed (or injured) when within reach of primary voltages they fail to wear rubber gloves and the unexpected happens, that is, when they cut out or slip; when wires supposedly dead become energized from contact with primary leads; when hoses or hoods on which men rely for protection become displaced; when wires they are pulling snag on objects and flip up into energized lines; when they touch trucks whose booms contact energized wires, and in a variety of related ways." (Accident Prevention Committee, Edison Electric Institute)

Rubber Glove Rule

The experience of many companies demonstrates that the wearing of rubber gloves *at all times* when within reach of wires or parts which are or may become energized at primary voltages is a highly practical procedure.

Use of the procedures noted would increase the safety awareness of line crews. Simply wearing the rubber gloves would be a constant reminder that safe practices are a part of the job and inseparable from the job if efficiency is to be attained.

The value of the "tail-board conference" can hardly be overestimated. If used as intended, there is no surer way of securing repetitive individual instruction in standard work procedures and in impressing on each employee at each job what the requirements are on that specific job. There are other ends served in this procedure. For instance, its use serves to point up management and supervision's interest in the protection of the employee; it helps

sharpen the perception of individuals to hazard and risk; it serves to impress by habit the proper procedures to be followed.

This procedure adds a new phase to the usually accepted education methods and engineering improvements. It adds personal supervision and on-job training; it provides the step which attests recognition that there is a common trait in most people of inability to learn new habits without repetitive performance. By renewing instructions at each job, by requiring that the same steps for the same situation be used all the time, and by supervising the job to see that these instructions are carried out, the goal of safe habits can be reached.

Acceptable work on a continuing basis requires that the employee have constant supervision. Admittedly, no foreman can watch every movement of every man all the time; but the actual imparting of instructions by the foreman to each man at each job, his participation in the job and his presence, with occasional reminders, serve the purpose of practically constant supervision.

The greater portion of all industrial accidents is due to poor attitude on the employee's part and a lack of knowledge or skill about the job or parts of the job. The problem of accident prevention is not so much involved in teaching him to *put on* his rubber gloves as it is in establishing the *habit* of *wearing* his *gloves* on every job.

Management's is the responsibility for safety—thus also the responsibility for teaching. But management must realize that teaching does not rest on simply telling, showing and demonstrating. It requires training—which means that supervision must see to it that the things taught are practiced as they are taught. Patience, diligence, understanding are necessary and must be exercised by management and supervision; otherwise, the effect striven for is lost.

The electric utility industry lost some $95,000,000 in 1950 through injury-producing accidents. By far the larger part of the loss was incurred on ordinary, routine, run-of-the-mill jobs. If crews can work under the most adverse and punishing weather conditions, under emergency pressures, for long stretches of time without rest and finish the job with no lost-time accidents, which they have done, then it is only logical to conclude that they *can*, if they *will*, accomplish the same result under non-stress conditions.

Management and supervision can supply the answer.

Pictures by courtesy of Ebasco Services, Inc.

"Don't send me flowers, Boss.."

"Just put some Anti-Slip Cosmolite on those slippery floors!"

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Anti-Slip Cosmolite Wax

HUNTINGTON LABORATORIES, INC.

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Vision Program

(Continued from page 20)

the phenomenal growth of the Society's Wise Owl Club during 1951. There are now 2,392 members compared with 1,435 a year ago—an increase of over 65% in the past 12 months.

(To become a Wise Owl, a worker

must prove—usually by showing his damaged safety glasses—that his sight was saved by wearing them. He receives a small pin to wear on his overalls. This pin helps remind other workers in the plant that an eye accident can happen anywhere and at any time.)

He added that a total of 431 plants—employing approximately 700,000 workers—now sponsor chapters of the safety-incentive club.

Safety and Service Emblems

Fewer accidents mean more man-power. Safety Emblems for various lengths of "no lost time" service instill the competitive spirit so necessary for employee cooperation.

Service Award Emblems for 1, 3, 5, 10, 25 and 50 years of continued employment, increase loyalty and reduce labor turnover.

Easily seen and readily recognized emblems such as those illustrated above are paying big dividends in many large plants. Also Identification Badges, Plaques, Athletic Medals, Trophies, etc.

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SAFETY MAINTENANCE & PRODUCTION Salutes a Safety Idea for FEBRUARY

Mineral Wool Protects Maintenance Men

ECONOMY-minded plant managers and operating engineers usually measure the effectiveness of thermal insulation in terms of dollar savings in reduced heat loss. Where high-temperature equipment is located in employee working areas, applied insulation also saves valuable man-hours by preventing burns suffered on accidental contact with very hot surfaces.

At the Glenwood Gas Plant of the Long Island Lighting Company, rooftop fan housings enclose induced-draft fans which draw waste gases, at temperatures from 600F to 700F, from boilers through exhaust ducts to the surrounding air. To protect maintenance men who are on the roof to service exposed parts of cracking furnaces, fans and fan motors, the dangerously hot fan-housings are covered with mineral wool blanket insulation up to about five feet above roof level. The top portion of the stacks are high enough to be left uninsulated. The blanket insulation, which covers indoor sections of the exhaust ducts, also helps the fans maintain a good draft because the hotter the gases, the better the draw.

The 2-in.-thick mineral wool blankets were secured to the sheet-metal fan housings by welded wires approximately 3-in. long. The blankets, with wire netting on the inside.

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Write for descriptive literature.

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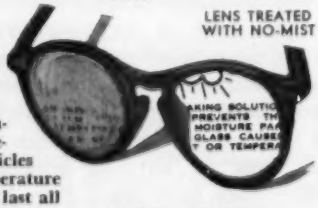

CAROL CHEMICAL PRODUCTS, CORP.
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were impaled on the wires and the ends of the wires were bent over into the metal lath covering the outside of the insulation. After a ⅝-in. layer of mineral wool insulating cement was trowelled into the metal lath and allowed to dry, finishing cement was applied and wire netting fitted over the surface and tightly laced. A weatherproof finish was provided by a ¼-in.-thick (when dry) coat of asphalt emulsion.

Picture by courtesy of the Industrial Mineral Wool Institute.

French Group Finds High U. S. Productivity Has Brought Greater Safety at Work

CONTRARY to the "prejudiced" views of one section of public opinion in Europe, the increase in productivity attained by modern American industry does not mean more industrial accidents, but greater safety at work.

That was the conclusion of 12 French industrial safety experts who have completed a six-week study of how the general problem of safety at work has been faced in the United States.

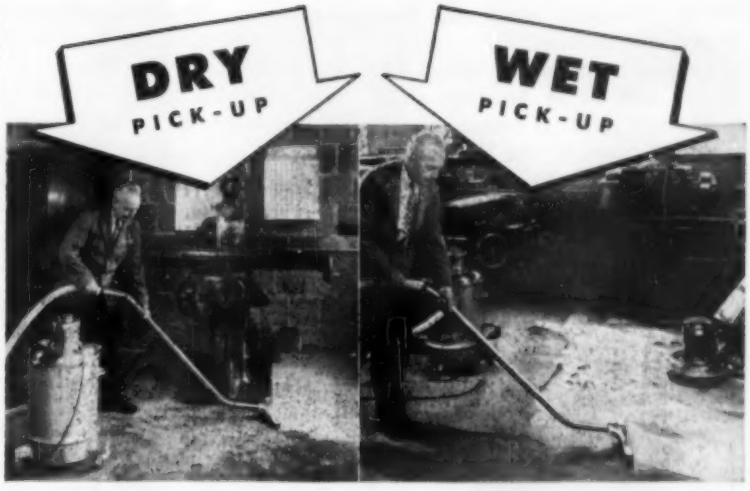
The team's findings gave the lie to French Communist propaganda alleging that increased productivity in U. S. industries has caused an enforced speed-up, with a tremendous increase in work accidents and thousands of mutilated employees. The Communists are using this lie in an effort to sabotage France's industrial productivity campaign.

The French team, whose study in the United States was sponsored under the technical assistance program of the Economic Cooperation Administration, saw that high productivity does not mean a work "speed-up," said Etienne Gout, general manager of the French National Social Security Bureau and leader of the team.

"In fact," said Gout, speaking for the team, "we are convinced that the increase of productivity in modern American industry is working together with an increase in safety and a decrease of workers' fatigue."

Other members of the team—which included employer and labor representatives and engineers—elaborated on the team leader's statement. One was a labor representative on the team, Louis Chazaud of Gentilly (Seine), inspector for the Organization for Prevention of Accidents of the French Building Trades and Public Works Union. He said his observations here had shown that the efficient organization of production processes, scientific plant layouts and other factors that go into the high productivity of mass-production industries in the United States, "actually promote greater safety."

This conclusion is also true in reverse, Chazaud added, because a higher degree of safety in a plant



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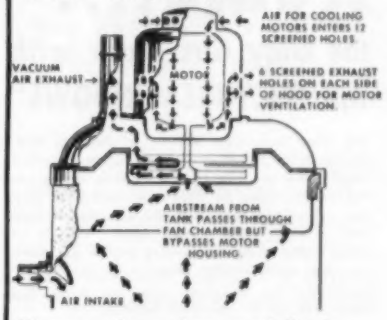
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6 SCREENED EXHAUST HOLES ON EACH SIDE OF HOOD FOR MOTOR VENTILATION.
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means "smoother work and thus greater productivity."

Greater emphasis is placed on safety methods at American mass production plants as compared with measures taken by the building industry at construction sites, where the work is less highly mechanized, he noted.

Health Also Aided

Robert Geraut, consulting safety engineer of the Nantes Regional Social Security Bureau, said factors which promoted productivity not only contributed to the safety of workers, but to their health.

"Better ventilation, heating, lighting and other such factors all make for better health as well as better working conditions," said Geraut.

Andre Pallaud of Boulogne Billancourt (Seine), chief inspector of the French Ministry of Labor, declared that as far as he was concerned, he was "astonished to find that the speed of work in the United States is actually less accelerated than in many plants in France."

While the team found that laws and regulations on industrial safety and hygiene are generally less highly developed in the United States than in France, safety consciousness and voluntary cooperation are more developed in many American companies and among the public, team leader Gout declared.

"It is remarkable that in spite of the small number of laws," he said, "both the employers and the unions are so concerned with safety.

"The good will and the cooperation of workers with management in observing safety rules such as wearing goggles and gloves when necessary, and so forth, are very effective, we have observed. These factors are especially effective in the field of safety, where compulsion can't give good results."

Another point which impressed the team was the fact that "in the safety organization of American plants, the safety department works as an adviser, but the responsibility is left to the supervisors and foremen," as Gout expressed it.

"Safety is one of the duties of management at all levels," said the team leader. "This concept seems to be the right one and we shall have to try our utmost to get this idea understood in our country."

Gout said the initiative of American firms in the matter of safety precautions is a matter of "human interest primarily rather than financial interest." In the plants visited by the team, there was apparently no attempt to evaluate the purely economic savings from accident prevention, he noted.

Safety measures in building and shipyard work seemed to be less well developed in the United States, the team concluded. While the group did not make a special study of these industries, the French safety experts noted some practices, including the use of certain scaffoldings under certain conditions, which would not be allowed in France, Gout said.

Agreeing with this general observation, Chazaud, a labor union expert in the building trades safety field, declared he had nevertheless "learned a number of tricks of the profession which will have a great influence on safety in France."

The team has visited factories and conferred with industry and government officials in Rhode Island, New York, Pittsburgh, Detroit and Dearborn, Chicago, Baltimore, New Orleans and Washington.

The team made additional study visits in the New York area and in New Jersey before departing by air for France.

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Texas Engineers Corps Stresses Safety

THE Fort Worth District, Corps of Engineers, which in the past 12 months has been assigned a large-scale program of military construction in addition to its civil

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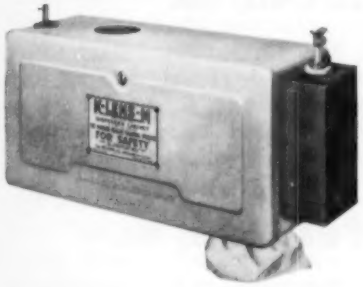

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works responsibilities, is accelerating its safety and accident prevention program to keep pace with the expanded construction activities.

Believing that the conservation of manpower, equipment and vital materials at its projects is, in effect, a "victory" for the national defense effort, the Fort Worth District is conducting a series of accident prevention clinics at its construction sites in North, East, Central and West Texas.

Acording to Colonel Delbert B. Freeman, Fort Worth District Engineer, special emphasis at these clinics is being placed upon the Corps' basic safety regulations and procedures. Modern training methods, including all types of visual aids, are being used in this program.

In all, approximately 135 Corps of Engineers employees are slated to attend these sessions, conducted by Richard W. Goodall, District Safety Engineer.

Early in 1952, the Fort Worth District will also conduct a construction safety conference in Fort Worth, to which representatives of contractors holding construction contracts with the Corps of Engineers, as well as by the Corps' supervisory personnel will be invited.

Theme of the conference will be "Close Gaps in Cooperation," in line with the Corps' policy of maintaining close cooperation in the enforcement of safety regulations and procedures between the government and contractor personnel.

Safety Training

In addition to these activities, a continuous program of safety education is conducted by the Fort Worth District at its project sites.

Workman indoctrination is one important phase of this program. Contractors holding construction contracts at Corps of Engineers projects are requested to instruct each new employee on the job in safety requirements and procedures to acquaint him with the particular hazards of his work and the protective equipment provided for him in his work.

At each project, Safety Council meetings are held at regular intervals (one each month or oftener) for Corps of Engineers personnel and contractor supervisory personnel. Contractors' foremen also hold safety meetings with their workmen once each week, or even oftener if the work is of especially hazardous nature to be followed by continuous, on-the-spot instructions.

Thus, the conservation of manpower and equipment, and consequently the conservation of public funds for utilization to the fullest extent, is a primary aim of the Corps of Engineers in its safety program. This has been one of the fundamental credos of the Corps in the past, and will continue to be in the future.

FREE
Bulletins & Catalogs

See page 68

THE FUTURE SHOWS

Atlanta, Ga.

March 2–4. Thirteenth Annual Southern Safety Conference & Exposition. (Biltmore Hotel) Braxton B. Carr, Executive Director, 2120 First Ave., N., Birmingham 3, Ala.

Philadelphia, Pa.

March 4–5. Eighteenth Annual Philadelphia Regional Safety & Fire Conference and Exhibit. (Bellevue-Stratford Hotel) Roy M. Godwin, chairman, Philadelphia Safety Council, 17th & Sansom Sts., Philadelphia 3, Pa.

Boston, Mass.

March 17–18, Thirty-First Annual Massachusetts Safety Conference & Exposition. (Hotel Statler). Edgar F. Copell, Pres., Mass. Safety Council, 31 State St., Boston 9, Mass.

Dallas, Texas

March 24–25. Thirteenth Annual Texas Safety Conference (Baker Hotel). J. O. Musick, General Manager, Texas Safety Association, Inc., 830 Littlefield Bldg., Austin, Texas.

New York, N. Y.

April 1–4. Twenty-Second Annual Greater New York Safety Convention & Exposition. (Hotels Statler and New Yorker). Walter A. Gustafson, general chairman, Greater New York Safety Council, Inc., 60 E. 42nd St., New York 17, N. Y.

Detroit, Mich.

April 7–10. Twenty-second Annual Michigan Safety Conference. (Hotel Statler) Frederick W. Krupp, Executive Secretary, 174 E. Atwater St., Detroit 26, Mich.

Columbus, Ohio

April 15–17. Twenty-second All Ohio Safety Congress & Exhibit. (Deshler-Wallick Hotel) James H. Fluker, Chairman, Div. of Safety & Hygiene, Industrial Commission of Ohio, Columbus 15, Ohio.

Asheville, N. C.

May 4–6. Twenty-second Annual North Carolina Statewide Industrial Safety Conference. (George Banderbilt Hotel) H. S. Baucom, Safety Director, North Carolina Industrial Commission, Raleigh, N. C.

Easton, Pa.

May 6. Twenty-fifth Annual Eastern Pennsylvania Safety Conference. (Hotel Easton) Harry C. Woods. Executive Secretary, Lehigh Valley Safety Council, 602 E. 3rd St., Bethlehem, Pa.

Chicago, Ill.

May 6–8. Twenty-ninth Annual Midwest Safety Show. (Congress Hotel) Joseph F. Stech, Manager, Suite 806, 10 N. Clark St., Chicago 2, Ill.

Baltimore, Md.

May 8–9. Statewide Safety-Health Conference & Exhibit. (Lord Baltimore Hotel) Joseph A. Haller, Executive Chairman Safety Health Conference, State Industrial Accident Commission, Equitable Bldg., Baltimore 2, Md.

St. Louis, Mo.

May 27–29. Central States Safety Conference. (Hotel Jefferson) Reyburn Hoffman, Safety Council of Greater St. Louis, 511 Locust St., St. Louis 1, Mo.

York Harbor, Me.

September 11–12. Twenty-fifth Annual Maine State Safety Conference (Marshall House). A. F. Minchin, secretary, Industrial Safety Div., Dept. of Labor & Industry, Augusta, Me.

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Safety Council Official Tours Latin America

MR. JAMES S. CARSON, Vice Chairman of the Board of Colonial Trust Company, has returned to this country following a three-months trip throughout Latin America on behalf of the Inter-American Safety Council.

The trip was made in a move designed to strengthen and expand the services of the Council throughout Latin America. When visiting 16 cities in 12 countries Mr. Carson consulted with safety councils and committees affiliated with the parent body. He also had discussions with top government officials, leaders of business and industry and representatives of press and radio, in

order to enlist their aid in securing still wider and more effective dissemination of safety concepts throughout Latin America, with stress upon the urgent need for prompt and thorough implementation of these concepts.

"Primary objectives of the trip," said R. J. Farlow, President and W. T. Rogers, Managing Director of Inter-American Safety Council, "is to encourage our members, associates and friends in their present activities and to inform them of Council plans for expanding our safety program, heretofore limited to mining, transportation and industrial enterprises. Our Latin American neighbors want to know what has been done in the United States towards educating the public as to the necessity of safety also in the homes and on the highways and we now propose to enlarge the scope of Council activities to include these vital areas."

Founded in 1937, the Inter-American Safety Council, a non-profit safety educational organization, now has a membership of a large number of companies, organizations and individuals working for the prevention of accidents. Included in its membership are such companies and associations as Pan American, Panagra and Taca Airways; Portland Cement Companies in South and Central America; Foley Brothers, Ltd.; American Foreign Power Company affiliates; The Land Authority of Puerto Rico; American International Underwriters Corp.; Lone Star Cement Co.; Cerro de Pasco Copper Co.; Sinclair, Esso, Socony, Phillips and Creole petroleum companies, and many other companies covering all fields of industry. The Council includes in its membership and is affiliated with safety councils in most of the countries in South and Central America.

In the 13 years of its existence the Council has achieved an enviable record, both in helping to reduce sharply the incidence of accidents and fatalities and in awakening in the people of Latin America an acute awareness of the benefits to be gained from positive, foresighted safety programs. The past decade, for instance, has seen reductions of better than 40% in the frequency and severity rates of injuries in key industrial fields. Several of the leading airlines and industrial firms, as well as many individuals, have received awards from the Council for effective safety records and life-saving feats. Many of the recipients of these awards have been brought to the United States to accept the awards in person.

Just as safety finds such ready acceptance in industry and helps in promoting good employee and public relations, safety being non-political, non-sectarian and non-controversial, something that "everybody wants"—the Inter-American Safety Council has an added function of constructively promoting and cementing friendly relations among all of the American people, North and South. On the economic side, Point 4 is strongly implemented by the promotion of safety through the Council.

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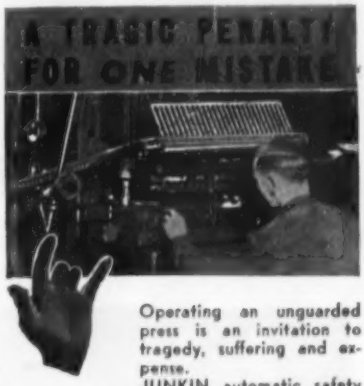

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industrial Hygiene

ASSOCIATE EDITOR
JACOB A. GOLDBERG, A.M., Ph.D.

Dust Control Unit Promotes Safety Maintenance & Production

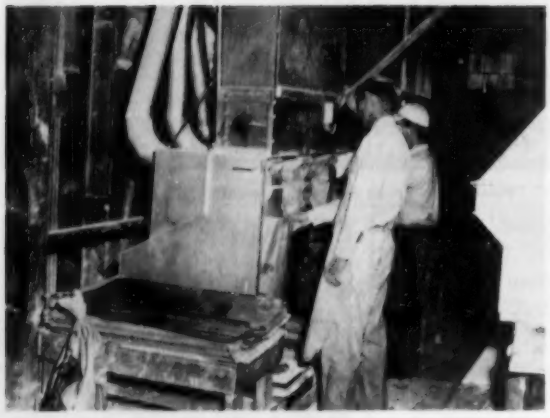

Figure 1: Dust control system in operation safeguards workers, helps maintenance, saves materials by confining flying dust.

Figure 2: With the dust control system turned off, the dust rises from bagging operations, creating maintenance problems.

A LARGE eastern insecticide plant gains three major advantages by pneumatically collecting dust evolved at mixing and bagging stations. The dust control unit protects workers from toxic insecticide dusts, eliminates plant house-keeping problems created by settling dust, and reclaims dusts which otherwise would escape and be lost.

The accompanying photographs dramatically illustrate the effectiveness of the dust control system. Compare the dust-controlled atmosphere around the bag-filling station in Figure 1 with the atmosphere in Figure 2. In the second photograph the control unit is turned off to demonstrate bagging operations without the control system. Other plants—chemical, food, cement, milling, wood, rubber, etc.—can gain similar advantages by analyzing their dust control problems and installing appropriate equipment.

Control Equipment

As soon as dust rises from mixing or bagging operations, it is caught by an air-stream flowing into the hood above the station. Dust is drawn by an exhauster-fan through dust-tight pipes to the dust-collector hopper from which it is reclaimed. Dusts handled at this plant include DDT, copper, sulphur, rotenone and rothane. Up to 45 tons of these poisonous insecticides are handled per day.

Picture by courtesy of Pangborn Corp.

B R E C K

pH7 PROTECTIVE CREAM

Industrial dermatitis can be caused by any one of hundreds of irritants. Breck pH7 Protective Cream is an oil-resistant type, formulated to protect against such classes of irritants as lubricating oils, cutting oils, greases, petroleum solvents, rubber dust, synthetic resins, tar, pitch and paints. Breck pH7 Protective Cream covers the site of application with an invisible, oil-resistant film that is neither slippery nor sticky. This film prevents the contact of irritant with the skin, thereby checking the possibility of irritation. Breck pH7 Protective Cream is easily removed with Breck Hand Cleaner or with soap and water, making the use of harsh, gritty cleansers unnecessary.

A Breck Industrial Preparations Booklet will be forwarded to you upon request.

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Learning the hard way

SO IT'S CHEAPER?

A STRUCTURE now used by a Canadian government department had been sprinklered during the last war, at which time the building was used as a hangar. Being a wet-pipe system, there was a considerable amount of pipe that was split by freezing last winter. Although an effort was made to change the sprinklers from a wet to a dry-pipe system, the local officials were unable to get the necessary appropriations. When the weather turned cold again last fall, the sprinkler system was drained and closed off to prevent possible freezing. A few weeks later, however, a fire got started in a wall of the building, and fanned by strong winds, the blaze soon reached large proportions. By the time the sprinkler system was reopened and the pumps manually started, the fire was out of control to the tune of $1,500,000. Investigators believe that if the sprinkler system had been in operative order at the first outbreak, the fire could have been confined to a very small area.

DUG HIS OWN GRAVE

TWO men were engaged in digging a trench about 4 feet wide and seven feet deep. While working on the bottom, the side caved in covering the men with sand and gravel. As a result one of the men died. There was no bracing of any kind to support the sides and the sides were not sloped. When working in trenches dug from loose ground, sand, gravel or other unstable materials, the sides of the trench should be braced or sloped to prevent cave-ins.

LEARNING THE SAFETY WAY

A PAINTER at a Naval Shipyard was painting a girder outside the catwalk on a mammoth 450-ton crane. The girder was about 200 feet above the water. The painter's safety belt was fastened to the railing which runs along the catwalk and which is broken by stanchions every few feet. The shipyard safety regulations require that safety belts be used outside the catwalk. When the painter reached one of the stanchions and was about to climb over the railing to the catwalk, a sudden gust of wind blew him off the girder, leaving him dangling by his safety belt about four feet below the girder, instead of plunging into the water 200 feet below.

A WORD TO THE WISE

THE importance of complying with safety rules was revealed when a most unusual accident occurred in a variation of a common hazard, jumping off a truck. A workman had been continually cautioned about wearing a finger ring on the job and about jumping from the truck rather than climbing down. Completely ignoring the repeated warnings the workman suffered a severely lacerated finger when his ring caught on a wire fastened to the side of the truck as he jumped down from the tailgate. Since the accident, ladders or retracting steps have been recommended for all trucks on the job.

Laboratory Safety

(Continued from page 31)

to contain the entire volume in event of breakage.

To facilitate handling of carboys and other large vessels, there should be inclinator cradles on casters. Smaller bottle tilters are also advisable, while a trussed handcart is necessary for transporting heavy cylinders of compressed gases.

☐ Improper disposal endangers everyone. Have the janitors and wash boys (actually the men who handle lab disposal) been acquainted by the trained personnel on how to dispose of, say, corrosive liquids, or scrap sodium, scrap potassium?

☐ Has a separate receptacle for broken glass been provided—and labeled?

The committee should see, too, whether refuse from the lab is collected at the close of each work day. One of the safest practices, laboratories will find, is to locate several disposal pits away from the plant buildings (care being taken that they are not near utility supplies, or unguarded against trespass).

Hygiene Groups Assist

Fortunately, even in this period of feverish industrial production and expansion, there is little in the way of laboratory safety that cannot be solved with the proper use of active safety committees; of such "awareness" devices as fresh, lively posters, charts and safety films; of such safety engineering as emergency showers, fume hoods, explosion-proof lighting, well-ventilated storage rooms; and of such safety apparatus as goggles, gloves, aprons, masks, as well as monitoring instruments for benzene, mercury, radiation, etc., and other ingenious safety devices developed and distributed by America's laboratory supply houses.

Plant laboratory committees will find invaluable assistance in their state and local industrial hygiene bureaus, which stand ready to cooperate with any lab safety program. These bureaus (which will make on-the-spot surveys of laboratory conditions) are happy to "help eliminate any hazards to health and safety from typewriter ribbons all the way to DDT." There are 59 state and local agencies, and their chemists, engineers, physicians and nurses provide 4,000,000 workers with over 40,000 field services each year.

Their work with air pollution and environmental cancer control has been indispensable. Now they have added still another service to the nation: they are inspecting and making safety recommendations to all laboratories whose personnel handle radioisotopes.

Thanks largely to alert "safety thinking" by American industry and to the vigilance of these local safety bureaus, lab workers using radioisotopes—that newest of lab hazards—actually rank among the safest workers to be found anywhere.

Pictures by courtesy of Fisher Scientific Co.

78% REDUCTION IN HAND INJURIES

plus 6c per man-hour saved

Edmont CASE NO. 207

PROBLEM: Company employing over 1000 men, to shear, form and dip-coat sheet steel products, found production penalized by frequent hand injuries from cuts, heat and acid burns, and resulting infections.

Canvas and neoprene gloves quickly cut or tore, costing, on many operations, more than 10c per man-hour for replacement.

SOLUTION: On-the-job tests resulting in adoption of heavy NEOX (reinforced neoprene) coated gloves for work with hot galvanized metal and acid solutions, and gloves with tough natural rubber coated palms and thumbs for handling dry sheets. A 78% reduction in hand injuries followed the change-over. The safer gloves also wore 3 to 5 times longer, at average cost saving of 6c per man-hour.

Case records of hundreds of operations prove that correct glove selection reduces lost-time accidents, improves worker attitude and productivity, usually saves 40% to 70% of glove costs. On-the-job tests arranged on request.

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How to Reduce Industrial Fatigue

FATIGUE, a major problem for industry, can generally be traced to the employee's attitude. A partial solution to the industrial fatigue problem and its harmful effects on production and accidents was offered by John V. Grimaldi at the annual meeting of the American Society of Mechanical Engineers in Atlantic City, New Jersey.

He recommended an engineering and educational program which will reduce the strains of industrial work and will have a beneficial effect on the employee's attitude and physical condition.

"Manpower is the most expensive single factor in production costs. Yet most industrial plants know relatively little and often do practically nothing about using their personnel efficiently," Mr. Grimaldi stated. "Industry should know the significance, with respect to optimum production, of the definite personnel qualities such as physical condition, attitude, and personality; and the variable qualities such as fatigability and susceptibility to depression, emotional upset, and process conditions and materials."

The fatigue encountered in most of modern industry is not that caused by hard physical exertion, he pointed out. "It encompasses that condition of weariness that one may experience at one instant and which, through some psychological stimulation or motivation, can quickly change to a feeling of alertness and vitality," he said. "We may say that fatigue is partially related to motivation. This possibility requires that industry look to methods for stimulating employees' interest as a means for eliminating the harmful effects of fatigue.

"But it should be remembered that the responses of the individual are initiated and limited according to his make-up. He may fatigue easily, be highly excitable, have the correct attitude toward safety, be relatively free of worry and so on, depending on his composition and organization. Occasionally these characteristics are affected by the industrial environment.

"For example, such materials as carbon tetrachloride, methyl chloride, trichlorethylene and carbon monoxide can cause dullness, confusion, excitement and languor, headache or visual disturbances, plus other effects upon the worker that would be directly responsible for reduced efficiency or accidental injury and which might simulate the results of fatigue. Unpleasant working conditions, such as poor lighting and noise, may have a similar effect."

Fatigue and Accidents

Research on the relationship between fatigue and accidents in industrial plants has shown that the accident rate increases with each successive hour of the morning, reaching a maximum two to three hours after work begins. In the afternoon portion of the day, following noon recess, the accident number and rate follow a curve similar to the morning's. The indicated presence of fatigue in the causation of accidents is emphasized by the fact that the higher accident risk accompanies the deeper decline of working capacity.

Surveys made during the first extensive employment of women in industry showed that women are much more susceptible to fatigue than men.

While it is difficult to detect and measure fatigue and impossible to accurately estimate its effects, its harmful influence demands action from industry, Mr. Grimaldi declared. He made the following recommendations:

(1) Each employee should be selectively placed at the proper job. This requires that his work assignment match his physical and mental abilities.

(2) The job should be engineered so as to produce the maximum efficiency contributable by the employee. Such factors as illumination, ventilation, posture, awkward movements, safety and health hazards, noise and general plant orderliness should be considered.

(3) The supervisor should attempt to reduce any possibility of friction between employees or between employees and himself. He should take a friendly interest in the workers in his department and should make them feel important to the organization.

(4) Speed-up of production lines should only be done after full consideration has been given to the possible cumulative effects of the increased activity

demand of the speed-up.

(5) Work weeks in excess of 48 hours on a six-day week basis should be avoided whenever possible.

(6) For monotonous and repetitive work, it is advisable to allow a five-minute rest period in each work hour. For less intensive work, a 10 or 15-minute rest period in the middle of the first and last halves of each shift should prove beneficial. It is advisable to provide milk, soft drinks, and nutritious sandwiches at these times.

(7) Shifts should be rotated infrequently, for example, every two or three months, rather than every week or two.

(8) Educational programs should be planned which will teach the rules for good posture, hygiene, nutrition, recreation and relaxation.

Standard on Acoustical Terms

HOW does factory noise affect the worker—how can it be diminished—at what point does it have a depressing effect upon the worker? These questions were asked, and answered to a large part, by the intensive research work done during and after World War II in the field of psycho-acoustics. The answers are reflected in the latest edition of the American Standard Acoustical Terminology just approved and published by the American Standards Association.

So many fundamental changes in concept have taken place in this field since the 1942 edition, that practically the entire section on hearing and speech had to be rewritten and expanded.

Terms such as threshold of audibility and threshold of feeling have been completely revised to bring them into agreement with the most recent experimental results. Threshold of audibility is no longer defined merely as the "minimum value of the sound pressure of a sinusiodal wave of that frequency which produces a pitch sensation." The new definition still recognizes use of the sinusiodal wave, but the concept has been expanded so that other methods may be used as long as the "characteristics of the signal, the manner in which it is presented to the listener, and the point at which the sound pressure is measured" are specified.

The enormous use being made of acoustical concepts in industry has been taken into consideration in the standardization of the term "mel" as a unit of pitch and "sone" as a unit of loudness. Using these two units, the decrease in the amount of noise in a given room can be calculated on an arithmetical instead of a logarithmic scale. This eliminates the use of the decibel and makes it easier for the layman to understand the amount of noise reduction accomplished. For instead of saying it was reduced from 93 to 90 db, the figure can now be expressed as being reduced from 4,000 to 2,000 sones.

Other terms discussed in this section are: pitch,

(Continued on page 67)

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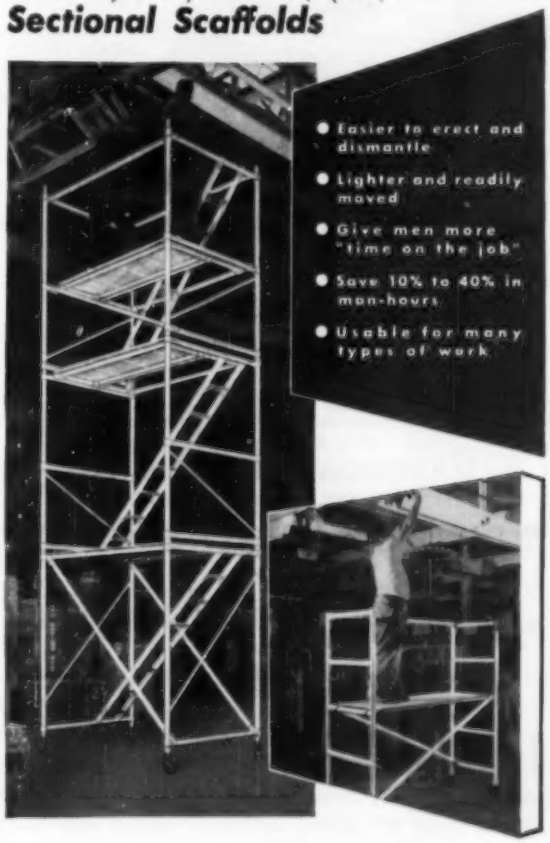
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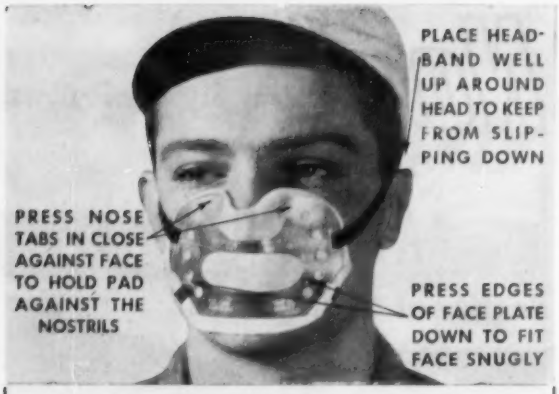

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"School" on Sound to Explore Whole Field

RECOGNIZING the importance of sound—wanted and unwanted, the University of Michigan is sponsoring a four-day course to explore the subject. The course, open to public, industrial health and safety personnel, industrial management, municipal officials, physicians and the general public, will be held at the University at Ann Arbor, Michigan, Feb. 5–8, under the auspices of the University's School of Public Health and its Institute of Industrial Health.

The course, entitled "The Acoustical Spectrum," is planned because of the growing interest in problems of noise among industry, the public, and municipal officials. As sound also may be beneficial as in musical therapy, the course will study not only noise abatement, but the whole range of sound including its benefits.

An outline of the course includes: sound and its behavior, ultrasonics, mechanics of vibration, biophysics of sound perception, effects of sound, and sound control.

The four-day course will be the fourth national symposium held on this subject within the last two years, indicating the importance of this subject in the minds of industrialists, medical men and municipal officials. Two national symposiums have been held by the Armour Research Foundation and the National Noise Abatement Council in Chicago, and a third was held in Washington.

Dr. Carey P. McCord, medical director of the Industrial Health Conversancy Laboratories, Detroit, will act as chairman. Sessions will be presided over and attended by national authorities on sound and its effects and controls.

How to Select Hearing Aids

A PRACTICAL guide to assist a person in selecting his own hearing aid, *Selection of Hearing Aids* by Edith L. R. Corliss, is based on National Bureau of Standards studies of the properties and performance of hearing aids as well as information from other organizations. The circular discusses the general nature of sound and the hearing process and outlines standards for judging hearing aids. It also lists a number of hearing aid clinics in the United States and organizations which offer impartial help in the selection of hearing aids.

Difficulty in determining objectively the exact nature of an individual's hearing loss makes it necessary for him to determine for himself which instrument can help most. The circular explains that he cannot depend upon the results of precise measurements, as can a person who has defective vision, and suggests points to look for in selecting his hearing aid. Although great care may go into the engineering design of a hearing aid, it must be suited to the needs of the individual wearer. Objective assistance in appraising his own hearing impairment and in selecting a suitable hearing aid can be obtained from hearing aid clinics and other organizations listed in the circular.

The circular also discusses the proper care of hearing aids, indications of impaired functioning, and means of preventing damage and reducing deterioration of the hearing aid. Copies of the 17-page booklet, National Bureau of Standards Circular 516, may be ordered for 15 cents from the Government Printing Office, Washington 25, D.C.

Rodent Control

THAT perennial problem confronting industry—rat and mouse control—is being solved. This good news had its start several years ago in the biochemistry laboratories of the University of Wisconsin where Dr. Karl Paul Link and his research group discovered warfarin, a powerful anti-coagulant or "blood-thinning" substance. The scientists found that rats and mice, after eating small amounts of warfarin bait over a period of five to 14 days, would die from internal hemorrhage.

Warfarin is now the lethal substance in more than

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Full Neoprene coated, 14½" gauntlet. Special thumb reinforcement. Liquid proof, curved fingers—for all industry.

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150 different trademarked rat and mouse killers. In slightly more than a year it has revolutionized the control of rats and mice. Warfarin avoids the "bait shyness" created by quick-killing poisons because of its cumulative action. Thousands of tests show that the rodents will eat the bait repeatedly. Many rats and mice find the warfarin-cereal bait mixture so tempting that they spend their final feeble moments trying to eat more.

Once warfarin bait has reduced the rat population to a minimum level—or to extermination, as is true in many cases—a limited number of permanent bait stations may be used to control newcomers and prevent a rebuilding of the population.

Warfarin is available in two basic forms—as a concentrate, to be mixed with the user's own bait material, and as a ready-mixed bait. Both are easy to use, and compared with other rat and mouse killers, warfarin is rated "safe." The mixed bait is placed in shallow containers along rat runways behind protecting boards, or in specially constructed bait boxes. Bait boxes not only protect the bait, but prevent children, pets, and domestic animals from coming in contact with it. They are highly recommended for industrial use.

Warfarin requires no pre-baiting, it keeps well, and it is economical. Best of all, it produces positive results. The user's major responsibility is that of keeping the bait containers filled with attractive bait.

Ventilation Conference

A SPECIAL short course on Industrial Ventilation will be held on the campus of Michigan State College, East Lansing, Michigan, on February 25–28. Sponsored jointly by the college's School of Engineering and the Division of Industrial Health, Michigan Dept. of Health, the course is being offered for plant engineers, contractors, consulting engineers and all others concerned with the design of industrial exhaust systems.

General sessions on various aspects of industrial ventilation will be led by prominent field engineers. Following each general session, those attending the conference will be divided into small groups for study of the application of the principles discussed to an industrial problem of their choice.

Further details concerning the conference can be obtained from K. E. Robinson, Consulting Ventilation Supervisor, Div. of Industrial Health, Michigan Dept. of Health, Lansing 4, Mich.

WHAT'S NEW?

See Pages 69–72

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Handbook of Dangerous Materials

OF INTEREST to safety engineers, plant superintendents, industrial hygienists and medical personnel is a new reference book, "The Handbook of Dangerous Materials," by N. Irving Sax, Toxicologist of the General Electric Co., assisted by W. W. Schultz of the general engineering laboratory and M. J. O'Herin of the fungicide laboratory. Arranged alphabetically, cross-referenced and indexed are over 5,000 hazardous industrial materials, including trade name products. In addition to chemical and physical properties, the guide outlines the hazardous properties of each material, offers safety recommendations for the protection of people handling the material, including the types of clothing or equipment that should be worn, and gives information on shipping regulations.

Specifically, the book includes maximum allowable concentrations, toxicity, flammability, and wherever possible, details on symptoms, treatment, antidotes, first aid suggestions, personnel safety precautions, fire extinguishing agents and similar pertinent data.

The 848-page volume also includes valuable sections on the storage and handling of explosives, fungus diseases and fungicides, and radiation hazards. It concludes with the complete text of the Interstate Commerce Commission's Shipping Regulations. This very important reference book is published by Reinhold Publishing Co.

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For details See page 22

Absenteeism

A DOWNWARD trend of male sickness absenteeism, based on illnesses and non-industrial injuries disabling for eight days or longer, began in the postwar period. The absenteeism rate for 1950, however, is somewhat above the rate for 1949 and may be the beginning of an upward swing (1951 figures not available at this writing). This increase in frequency was participated in by each of the broad cause groups: respiratory diseases, digestive diseases, non-respiratory and non-digestive diseases, and non-industrial injuries. The female rate in the postwar period, on the other hand, was comparatively level, with only a slight increase in 1950. By comparison, the rate for males in 1941 was 101.3 average annual absences per 1,000 persons (absences of eight days or more), while for females the rate was 163.3. In 1950 the male rate was 116.8, while for females it reached 258.4. The increase in sickness frequency during 1950 is in harmony with past experience when higher sickness rates occurred in periods of increased industrial activity. Associated with this are a number of factors which may be responsible for increased sickness absenteeism. These include increased employment of youth, the older worker, increased em-

ployment of women, the hiring of workers long unemployed, and hiring of the inexperienced, emotional strain, personal mental conflicts, lack of job satisfaction, poor plant nutrition programs, inadequate housing and living conditions and lack in the community of prompt and efficient medical service. In September, 1951, there were 18¾ million women employed, an increase of ¾ million over the number employed in September 1950. In the light of these several facts, it seems evident that if the percentage of absenteeism is to be reduced appreciably—especially since the number of women employed is so large—industrial nurses, safety engineers, community planners and others need to join hands in a mutual endeavor to meet various local needs.

Nature of Injuries

THE carefully compiled statistical report of compensated cases closed in New York in 1948 serves to highlight the distribution of accidental injuries and occupational diseases. Although there were only four cases of cancer for which compensation was granted, the average cost per case was $7,400. A total of 92 cases of silicosis cost an average of $9,422. Numerically cuts, punctures, and lacerations made up the largest group of cases when classified as to nature of injury. Out of 108,838 compensated cases, 24 per cent (26,908) were of this type. Sprains and strains (other than hernias) were 149 fewer in number than the 24,967 fractures recorded. The percentage distribution of the various kinds of injuries has been much the same from year to year. Two-thirds of all injuries in 1947 and 1948 consisted of cuts, strains and fractures. Hands and fingers are the parts of the body most often subject to industrial injuries. In 1948 as in 1947, hand and finger injuries comprised more than 25 per cent of the compensated closed cases. Trunk injuries and injuries to legs and feet were only slightly less numerous than hand and finger injuries. Injuries to other parts of the body although less numerous, often prove more costly. The average cost of a head injury, for example, was $1,360 while that of injuries to hands and fingers was $366 per case. More than a third of leg and foot injuries were fractures. The severity of leg injuries was evidenced by the 24 cases of permanent total disability due to fractures of the hip or femur. Incidentally, the permanent impairment from these injuries had an estimated cost of $15,339 per case. The preceding statistical data are selected from a mass of material in Bulletin No. 6, 1950, Division of Research and Statistics, State of New York Workmen's Compensation Board. Those interested in additional data are referred to this excellent publication. The cold figures of nature and extent of injuries and some occupational diseases, plus the average costs involved per case, emphasizes how a bit of prevention can save a lot of money, and more important, avoid a lot of suffering.

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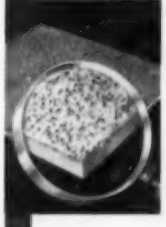

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THE INDUSTRIAL Nurse

EDITOR

ROSAMOND J. WEBSTER, R.N., A.M., Ph.D.

Death Rate Down–Cases High

THERE has been widespread publicity and jubilation over the drop in the tuberculosis death rate from the peak of about 200 deaths per 100,000 population around 1900 to the provisional death rate of 26.1 for 1949. This good news unfortunately may leave the impression that tuberculosis is a problem that is already solved. Yet tuberculosis is the principal communicable disease for the world as a whole. It is estimated that between 3,000,000 and 5,000,000 people die each year throughout the world from tuberculosis. Even in the United States it still causes nearly 40,000 deaths per year. It is the chief cause of death in the United States in the important child-bearing and child-rearing ages of 15 to 34. Because so many people die from tuberculosis in the prime years of life, it causes a potential loss of years of life approximately equal to cancer, and not far behind the combination of diseases called "heart disease."

Today, more cases of tuberculosis are known than ever before, largely because of improved case-finding methods. There is good reason to believe that the death rate is dropping faster than the prevalence of tuberculosis. In other words, we are keeping those sick with tuberculosis alive longer than ever before. The present world crisis is a threat to the eradication of tuberculosis, as well as to every other ideal of the free peoples of the world. Millions of our citizens, as soldiers and sailors in our armed forces, will have close contact with others all over the globe in the years to come, including areas of very high prevalence of tuberculosis. Such mixing will be on an unprecedented scale. With the technical scientific and medical assistance which is already being made available through the World Health Organization, much may be accomplished in the years immediately ahead. But tuberculosis is still with us in this country as a major health menace. Industry can do its part in case-finding and setting up sanitary working conditions.

Health Benefits to Workers

IRRESPECTIVE of attitudes towards any governmental scheme of health insurance, it is heartening to note the progress that has been achieved through hospitalization insurance on a voluntary basis. According to a U. S. Senate report entitled "Health Insurance Plans in the United States" and another entitled "A Survey of Accident and Health Coverage in the United States," some valuable data are made available. It is estimated that at the end of 1950, 76,961,000 persons in this country had one or more insurance policies to defray the cost of hospital care, in full or in part. This total figure is divided as follows: Blue Cross 38,822,000; commercial group 22,305,000, commercial individual 17,682,000. The tremendous rise in 11 years is evident from the total of 5,544,000 in 1939 to about 77,000,000 in 1950. Under group commercial insurance a steady increase has taken place in the number of days for which benefits are payable, in the value of daily indemnity, and in the lump sum allowance to defray the cost of extra services. There has also been a tendency to eliminate age limits for subscribers and to cover more dependents. Under individual commercial insurance, offerings have been similarly liberalized, but data are not available at present on trends in actual benefits. However, the majority of companies still have age limits of 65 or more for the issuance of policies and many have age limits of 65 for renewals. Because of the rising costs of hospitalization, some Blue Cross plans shifted in recent years from service benefits to cash indemnities for room and board. In 1950, however, a reversal to service benefits appeared under way. This extensive hospitalization coverage, coupled with many medical care and treatment plans already in effect, have a distinct stabilizing influence. It might be helpful if industrial nurses knew what coverage the employees carried independently of company serviced plans.

Understanding the Patient

A WISE physician with long experience in his specialty of surgery read what amounts to a sermon to his fellow practitioners. His understanding of human nature is such—and especially of the sick ones—that part of his remarks warrant repeating. They apply not only to physicians but also to industrial nurses. Likewise, they carry a kernel of validity to administrators as well. This is what he had to say: "You cannot help a man if you dislike him, and the only alternative to dislike is to work at understanding. You may feel that you are beyond prejudices, but I suggest that you examine your attitude towards the sick young man who is very dependent on his mother, toward people who whine and beg for relief from pain, towards the woman who does not want to have any more children, toward patients unwilling to leave the hospital, relatives who know a little about medicine and try to tell you how to treat the patient, and patients, with vague, indiagnosable aches and pains who keep coming back in spite of your having told them they are not ill. If you find yourselves turning away from these people, feeling put upon by them, labeling them 'cracks,' 'bores' and 'nuisances,' then you need to discipline yourselves if you are going to have any success in the full practice of medicine. They are sick, they need an understanding doctor, they deserve courtesy, understanding, and help."

These remarks by a physician who is evidently a humanist above all—and most physicians and nurses belong in that category—still bear repeating and cogitation. It is altogether too easy to dismiss the chronic complainer, the constantly ailing man or woman whose aches and pains may have, as indicated, a basis of emotional difficulty, lonesomeness, a yearning for sympathy, and a kind word from a lady in white. Understanding can go a long distance in easing physical pains having an emotional basis.

Congress on Industrial Health

THE 12th annual Congress on Industrial Health was held at the William Penn Hotel in Pittsburgh on January 18th and 19th. Several national organizations collaborated in the plans for the meetings. The general theme of the sessions was industrial health services as a significant factor in the whole health picture of individual workers, requiring planned integration with many other community health resources. These include the practicing medical profession, the official and voluntary health services, and organizations dealing with housing, nutrition and recreation. The favorable effects of our industrial health service can frequently be discounted by unhygienic habits or conditions away from work, where most time is spent. The industrial health movement in this country has a fairly long history,

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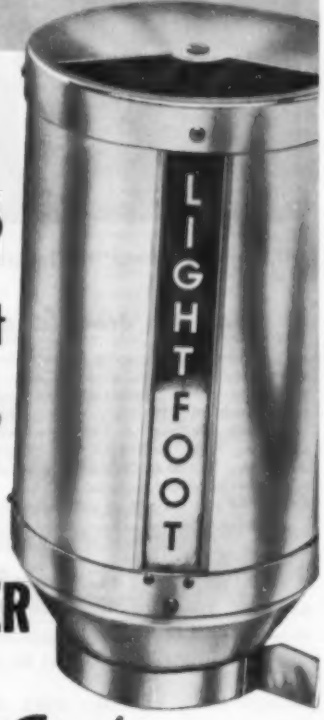

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though really effective work does not go back much beyond a quarter of a century. It is interesting to note in this relation that this conference is only the 12th. But the leaders in this movement have been laboring effectively for about forty years to bring about the relatively high degree of research and efficiency in the industrial hygiene field. It is only a comparatively few years ago that the U. S. Public Health Service received funds with which to undertake a fairly effective research and service program; that the several states aided by federal grants organized divisions of industrial hygiene in their health or labor departments. With these steps came concern at the local levels as well, with municipal departments of health organizing industrial hygiene services. Much still remains to be done. In forwarding the program of health and safety in industry, nurses and their professional co-workers in industry must be in front. Progress cannot come only in the area of governmental action.

Mental Changes

GENERAL observation has taught industrial nurses and others that in the process of aging some begin to show mental changes at a comparatively early age. This may be due to various organic changes that have taken place in a given individual. The rate and degree of such alteration varies. Even when the personality changes of age are marked as the result of early organic alteration, it has been found that the capacity of an individual to make a satisfactory though transient adjustment is more directly related to his complex cultural, economic, and family problems than to demonstrable pathologic changes. Psychiatric studies of those showing evidence of mental deterioration classify the common symptoms of simple deterioration as follows: (1) definite memory failure, (2) markedly restricted mental activity, with a tendency toward apathy, (3) aberration of talk, including loquacity, rambling, slowing and poverty of speech, (4) loss of interest and desire for occupation, (5) marked dislike of new things and new ideas, (6) diminished capacity for self-care and neglect of personal appearance, (7) severe emotional reactions under stress, and (8) asocial behavior outbursts. It is readily evident that some of these manifestations of aging may require hospitalization and commitment as a last resort when marked depression, delusions and hallucinations become evident. With the growing necessity to retain older workers because of manpower shortages in some areas of the country, it seems likely that industrial nurses may be called upon to be alert to abnormal mental reactions among older workers. As already indicated, many adults in the upper sixties and even upper seventies or older, show no such signs of physical deterioration evidenced in mental manifestations. But when an older worker becomes emotionally involved, depressed, suspicious of fellow workers, it may be desirable to refer him to the plant physician for further study.

Public Health

THE president of the American Public Health Association, in his recent presidential address, pointed out the progress made in the practice of medicine, and more particularly in public health activities. He took occasion to indicate the awareness of the large majority of American physicians to public health practices and current lapses. Among the latter, he emphasized that a public, once awakened to the fact that the terrific burden of tuberculosis, venereal disease, diabetes, and even some cancer and heart diseases is preventable and can be lightened, will not be complacent for long when a few local physicians offer organized methods of case finding. The average citizen is not impressed with his physician's concern for the health of the public when he is told by him that a local health department means "socialized medicine". There is something wrong when a few physicians in a community advise a committee of public-spirited citizens that a visiting nurse service might be a good thing provided it has nothing to do with the health department. It is not reassuring to the public health when a state medical society passes resolutions opposing a well operated state health department

program for the care of crippled children without proposing a better method. It does not make the health officer feel like championing the cause of the private physician when that physician sponsers legislation designed to limit public health activities to five or six basic minimum functions, thus denying him the right to exercise his legal responsibilities, and to guide his community in attacking new and pressing problems with which it is deeply concerned. These several criticisms come from the pen of a leader in medicine and public health, as well as a responsible official in a large insurance company. What a community does in the field of public health affects the health and working efficiency of its residents in many instances. Awareness of this close relationship may aid industrial nurses and others in industry to understand the influence of local case-finding and medical care on worker output.

Trauma and Tuberculosis

ALERTNESS to tuberculosis and the relationship of trauma to reactivation of the disease is always essential. The problem is quite involved from both medical and legal points of view. A claim that trauma is a primary etiological agent in tuberculosis is virtually never proposed. Occasionally the question arises whether a previously healthy tissue becomes involved with tuberculosis following injury. The theory that such trauma produces a lowering of resistance which in turn permits the invasion of tubercle bacilli and the establishment of a tuberculous lesion owes its origin to the fact that in some cases the lesion was not known to exist previously. Clinical experience has shown that this theory has little to support it. In an occasional case trauma may cause extension of infection from a lesion to an immediately adjacent structure. A clinical worker who claimed to have suffered a pulmonary hemorrhage following the striking of her chest when she pulled out a cabinet drawer was found to have active tuberculosis although she was not aware of her condition. Her place of employment had no plans for pre-employment or periodic medical examinations and the worker paid no attention to her cough, loss of weight and slight temperature rise. A waitress in a plant restaurant was struck in the chest by a fellow employee shoving the carrying tray. A pulmonary hemorrhage followed a few weeks later, and it was shown that there had been a fairly long history of tuberculosis. Medical reports indicate innumerable instances of trauma in tuberculous patients which do not lead to infection of the involved parts. Whenever the question of aggravation arises, it is usually possible by careful examination and history taking to discover evidence of the previous presence of a latent or incipient lesion. It is well to be informed about these and related matters; to have as complete a history as possible of previous illnesses, hospital admissions, clinic attendance and other medical or surgical treatment.

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Acoustical Terms

(Continued from page 59)

loudness, loudness level, phon, loudness contours, auditory sensation area, level above threshold, masking, air conduction, bone conduction, hearing loss, hearing loss for speech, percent hearing loss, percent hearing, audiogram, masking audiogram, difference limen, aural harmonic, electrophonic effect, articulation, syllable articulation, sound articulation, vowel articulation, consonant articulation, discrete, discrete sentence intelligibility, instantaneous speech power, peak speech power, average speech power.

Development of this standard was sponsored by the Acoustical Society of America in cooperation with the Institute of Radio Engineers, under the procedures of the American Standards Association, Experts in all phases of acoustics worked on the standard. In addition to the section on hearing and speech there are sections on: sound transmission and propagation; transmission systems and components; ultrasonics; music; recording and reproducing; shock and vibration; underwater sound; general acoustical apparatus; and general and architectural acoustical terms.

Copies of the American Standard Acoustical Terminology, Z24.1–1951, may be obtained from the American Standards Association, 70 East 45 Street, New York 17, N. Y. at $1.50 per copy.

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PLANT SECURITY

Plant Protection O-201
Detex Watchclock Corp. An unusually well detailed and fully illustrated 12-page booklet offers a revised manual of rules, regulations and instructive information to guide watchmen, guards, supervising personnel and management. This booklet serves as a reference guide for those people who are responsible for plant security especially during these times of national emergency.

Civil Defense Equipment O-202
Mine Safety Appliances Co. This 28-page booklet offers an outline of action for welfare, warden, fire, rescue, transportation, etc. departments of a civil defense unit. A table of equipment for each of the departments, including everything from stretchers and splints to artificial respiration equipment, is broken down according to its function and use by the various departments. Guidance for the booklet was obtained from records of countries subjected to aerial attack in World War II.

PERSONAL PROTECTION

Skin Protection O-203
Vanfaire Products. Industrial dermatitis, which normally accounts for more than 60 percent of all occupational diseases, is discussed in this 8-page technical bulletin containing laboratory testing reports, testimonials from users, industrial applications and data on the active ingredients of a new skin protection lotion. The lotion not only protects against the incidence of dermatitis but also acts as a germicidal guard against infection of minor cuts and scratches.

Rubber Footwear O-204
Beacon Falls Rubber Footwear. Showing a complete line of rubber footwear for industrial applications, this two-color fully illustrated broadside describes the style, sizes and construction of shoes and boots for specific hazards and operations. Magnified blow-ups pictorially point out the top construction, non-slip soles and safety toe features in this full line of rubber footwear.

Protection for Welders O-205
Kimball Safety Products Co. This 4-page illustrated folder offers a top selection of welders safety clothing and equipment consisting of welder's gloves of split horsehide; sleevelets in various lengths of duck, leather or asbestos, aprons of asbestos, duck or chrome leather; welder's curtains equipped with grommets and fasteners for attaching pipe framework. Also cataloged are the welder's protective goggles conforming to federal specifications, helmets of heavy durable fibre and space-saving folding face shields of grain leather.

New Wooden Sole Sandal O-206
Reece Wooden Sole Shoe Co. This 1-page mailing piece describes and illustrates the newly improved "Hot Foot Sandal." The bulletin gives construction details and points out the advantages of using the sandals in a wide variety of industrial hazards, such as foundries, hot floors, furnaces, cinders, ovens, acid and oil.

FLOORING

Abrasive Flooring O-207
American Abrasive Metals Co. A new folder emphasizes the safety feature in the use of abrasive grit in a variety of flooring materials to eliminate slipping hazards. The folder describes a full line of materials including: non-slip floor paint, plastic trowelling compositions, adhesive abrasive fabric, and the cast abrasive metals of the heavy duty and longer wearing class. Each individual booklet in the folder elaborates on the many and varied industrial applications, including specifications, floor plans, and hints for construction.

Setting Floor Brick O-208
Master Builders Co. The new bulletin describes a method for installing floor brick and heavy tile to produce a floor with exceptional durability. This 4-page illustrated bulletin discusses the importance of narrow, tight joints where corrosive conditions exist and describes the advantages of a non-shrink mortar.

PLANT MAINTENANCE

Modern Maintenance O-209
Hillyard Sales Co. An indispensable guide to factory, office and public building maintenance is this 48-page catalog. With emphasis on floor products, including cleaners, conditioners, sealers, dressings, paint removers, waxes, brushes, and floor machines, the catalog also offers paints, roof coatings, caulking materials, soaps and dispensers, deodorants, disinfectants, insecticides, etc.

Industrial Lane Stripper O-210
Kelly-Creswell Co. This 4-page bulletin offers full specifications on a machine especially designed for aisle and safety lane applications in industrial plants. The spray-gun assembly and the unique air-curtain which permits the application of clean straight lines on rough or smooth surfaces are located outside the line of the wheels. The bulletin also describes a heavy-duty industrial model, a municipal model and an all-purpose type.

POWER PRESS SAFETY

Safety Feeders O-211
F. J. Littell Machine Co. This catalog section, consisting of 4-pages, shows how hand injuries in press feeding operations can be reduced by using air-operated manual feeding devices. Fully illustrated, the pages describe vacuum feeders with one, two or three cups and also mechanical pickers. Cut-away drawings give construction details.

FIRE PROTECTION

Lanterns & Safety Cans O-212
Justrite Mfg. Co. Of interest to emergency squads and safety directors is this 16-page catalog of Justrite products. The largest space is devoted to various types of battery-powered flashlights, head lights, railroad and floodlight lanterns and safety lights. The latter includes U.L.-approved units for hazardous locations. The catalog also gives details on a full line of safety cans, plunger cans, oily waste cans, and a vaporizing liquid extinguisher.

WASHROOM SANITATION

Electric Hand Drier O-213
National Dryer Corp. A two-color handsomely illustrated folder explains in detail the cost reducing and increased washroom efficiency offered by this new hand drier for industrial application. Designed to promote employee good will and to cut down washroom maintenance costs, the folder presents an analysis of comparative costs of paper towels vs. the electric hand drier.

DUST & FUME CONTROL

Dust & Odor Filters O-214
Research Products Corp. A recent bulletin describes a filter panel unit which uses specially treated fibres for the removal of both dusts and odors from the air of heating, ventilating and air conditioning systems. The bulletin includes a chart of technical data and cut-away drawings to show how the filter works.

Vapor Control for Wet Machining .. O-215
Aget-Detroit Co. The control of vapor, mist and fog from the most common wet machining operations is covered in a bulletin that shows various self-contained unit-type collectors. Illustrations of typical applications include: thread grinders, centerless grinders, screw machines, surface grinders, etc. A table gives pertinent data on the various models.

Dust Collectors O-216
American Wheelabrator & Equipment Co. Various sizes and models of clothtube type dust collectors and the advantages to be gained from cloth filtration are offered in this new catalog. The description of each type of collector is accompanied by complete specifications, construction drawings, cut-away views, and illustrations of typical installations. Safety engineers, plant managers, and maintenance men will find this 36-page catalog of tremendous value in planning dust control layouts and installations.

RADIATION PROTECTION

Radiation Instruments & Equipment . O-217
Radiation Counter Laboratories, Inc. A 12-page catalog offers a complete line of instruments and devices for detecting, measuring and shielding against radiation hazards. The catalog is divided into the following general sections: electronic circuits, health instruments, Geiger & proportional counters, flow counters, shields and safety devices, glassware & chemicals, and accessories, which include lead-leather gloves and lead-rubber aprons.

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What's New . . .

★ A coupon is provided at the end of this section for your convenience in obtaining illustrated descriptive literature of products listed here. *Send the coupon or written request to:* Service Dept., SAFETY MAINTENANCE & PRODUCTION ★

SILICONE WATER-REPELLENT

FOLLOWING a long period of laboratory and field research, the Wurdack Company, of Mo., has been granted a patent on the application of silicone materials to masonry for water repellency. The product, a clear, transparent fluid, is marketed under the name "Crystal."

The use of a silicone water repellent on homes, institutions, factories, and schools has become increasingly popular because of the protection it affords without marring or changing the beauty of the masonry.

Other widespread uses foreseen for silicone water repellents will be to protect and sanitize milk houses, feeding aprons and dairy barns in agriculture and for use on the floors of bathhouses and swimming pool decks and gymnasium shower rooms.

A silicone water repellent is practically unchanged by extreme heat or cold and may be sprayed on at any temperature. Accelerated weathering tests indicate a life of as much as ten years from a single application. Other virtues claimed for "Crystal" are that it protects mortar joints, as well as seepage-through above grade brick, stucco, concrete block and other masonry materials. It prevents efflorescence, staining and spalling and makes masonry surfaces stain resistant. Send in coupon for details.

BOMB WINDOWS

A NEW glass-plastic laminate to be known as Flexseal Bomb Glass has been announced by the Pittsburgh Plate Glass Co. The product is said to virtually eliminate the dangers of flying glass in explosion areas. The Bomb Window will resist normal atmospheric pressures because of the special properties incorporated in its design. When these are exceeded by a bomb blast or pressure wave, the window will open automatically by folding about its edges. This action releases the pressure, preventing the window frame from being blown in and greatly reducing the possibility of flying fragments.

The window consists of three layers laminated into a single unit. The outer layer is a sheet of glass, the middle layer a partially segmented sheet of polyvinyl butyral plastic, and the inner layer consists of four triangularly shaped pieces of glass, the central area edges of which register with the segmented edges of the plastic. The plastic layer extends beyond the glass edges and is bolted to the window frame to serve as hinges, thereby permitting the four segments to open like doors when the outer plate of glass is broken. In the picture at left, window is shown in normal installation; at right, after panels have been opened.

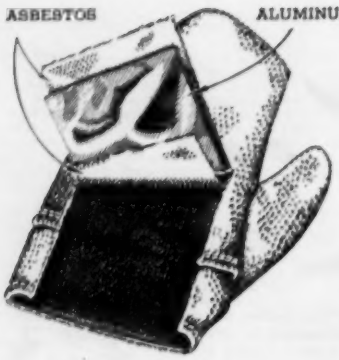
The vinyl plastic will stretch up to 400 per cent of its unstressed length and return to within ½ of one per cent without rupture. This safety-valve property, incorporated in the design, prevents high pressures from building up which would ordinarily blow the entire window, frame and all, into the room, exposing the occupants to many hazards.

Flexseal Bomb Glass windows have been tested and proved at Pittsburgh Plate's research division by using explosive force greater than that previously revealed for the Hiroshima type atom bombs at a distance of a mile. For details, send in the coupon.

ANTI-RUST PRIMER

REMOVAL of rust before painting has always been an expensive and difficult maintenance problem. Now, the problem of removing rust is no problem at all. You just don't remove it. OSPHO, a carefully balanced formula of Orthophosphoric and Dichromate with extenders and wetting agents, is being successfully used to prime rusted surfaces. The manufacturer, Rusticide Products Company of Ohio, specialists in corrosion problems for over thirty years, claims that you need only remove loose rust and scale with a wire brush, apply a coat of OSPHO, let dry, and paint. They emphasize the fact that OSPHO is *not* a paint. It is a metal primer.

When OSPHO is applied to rust, it causes the iron oxide (rust) chemically to change to iron phosphate, an inert, hard, dark gray substance. Rust action is stopped and the subsequent paint attaches itself so tightly that moisture and oxygen cannot attack the metal. OSPHO is also used to prime new ferrous metal. When metal is free from dirt, grease, and oil, a coat of OSPHO produces a very slight etch. It is equally effective for exterior and interior work alike, is applied direct from container, and is easy to use. For details, send in the coupon.

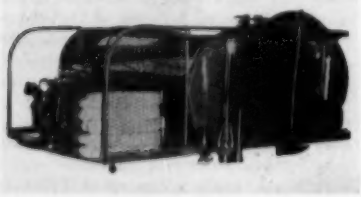


RADIATED HEAT SAFETY GLOVE

DESIGNED especially to protect the hands of workers exposed to radiated heat conditions, a new, durable Asbestos Aluminum-Lined Reversible Mitt was announced this week by the Milburn Company, Detroit.

Constructed of a sheet of aluminum-coated fabric between two layers of heavy asbestos, the glove is jersey lined, providing maximum heat resistance, without causing skin irritation. Experimental tests proved conclusively that this mitt reflects up to 90% of radiated heat. In fact, no visible effects were indicated after handling objects heated to 1200 degrees Fahrenheit. Because the asbestos is specially treated, the Milburn Mitt offers high abrasive resistance, also.

The Aluminum-Lined Mitt can be useful in such operations as steel mills, force plants, heat treating and glass manufacturing, for safe handling of hot castings, molds, hot glassware and similar objects. Moderately priced, the glove can be worn on either hand, adding longer wear, greater savings. For more information send in coupon.



PORTABLE FIRE FIGHTING UNIT

PORTO Pump, Inc. of Detroit, is now introducing their new pallet model Porto Pumper fire extinguishing unit. The pumper quickly converts any truck into effective fire fighting apparatus and lowers the cost of automotive fire apparatus to a price that all can afford who need protection from fire. This model can be used by any group, community or organization that requires fire fighting protection, although located at a distance from organized professional fire fighting service. Basic equipment is composed of a water tank with capacity in excess of 200 gallons, hose rack (capacity 600 feet of 1½" discharge hose), a demountable Porto Pump (which is a rotary positive displacement type, rubber-gear pump powered by a 4-cycle gasoline engine), supply hose, aluminum extension ladder, 200 feet fire hose, fire axe and hand extinguisher, straight stream nozzle, combination fog and straight stream nozzle.

The pumping unit is readily demounted and may be rapidly carried to water source which could be hydrant, well, ditch, pond or stream. The rubber gear construction permits the use of either dirty or clean water. Excellent performance is obtained with straight stream nozzles, fog nozzles or foam equipment. The pump's wide base permits its placement and operation on soft ground. The slip-on unit pallet model Porto Pumper can be easily and quickly removed from the trucking equipment at any time, releasing this truck for other gainful uses. Full information can be obtained by sending in the coupon.

"SWING" SCAFFOLD

AN ALL-METAL "swing" scaffold, consisting of gear type winch and a trussed steel stage with work area of expanded metal, has just been added by Bil-Jax, Inc., of Ohio, to its line of tubular steel scaffolding.

The winch has a capacity of 1,000 lbs., is equipped with 75 feet of steel cable, and has drum capacity for 75 feet. It has an automatic brake, pawl engaging in ratchet, for safety.

The standard stage is 30" wide and 20' long, and requires only two winches. No planking is needed as work area is expanded metal. Standard equipment with each stage includes two adjustable caster wall guides, four 40" guard rail posts, and two 20' guard rails. For further details, send in the coupon.

COMBINATION FLOOR MACHINE

FINNELL SYSTEM, INC., of Indiana, introduces the Combination Scrubber-Vac machine featuring a self-starting gas engine designed for power, smooth operation, and durability. All working parts of the machine are driven through non-slip, long-life timing belts by a 2 cylinder, 4 cycle, 9.4 HP Onan & Sons Company gas engine.

Designed for large area "production scrubbing," this maintenance machine applies the cleanser, scrubs, rinses if required, and damp dries the floor—all in a single operation! It is capable of scrubbing up to 16000 square feet per hour, depending upon the amount of dirt, congestion in the area, etc. Maximum forward speed is 136 feet per minute. Two 18" brushes mounted on universal type couplings give a 36" scrubbing surface.

Another special feature includes the FINNELL developed clutch, multiple friction disc type of bronze and hardened steel. Slight pressure on the finger-tip clutch handle propels the machine at any rate desired, up to 136 feet per minute. A two stage turbine fan provides a powerful vacuum to quickly remove grease and sludge loosened from the floor. For details, send in coupon.

SPARK-ENCLOSED GASOLINE TRUCK

GASOLINE fork trucks are now available in spark-enclosed models it was announced by the Philadelphia Division, Yale & Towne Mfg. Co. The new trucks are designed to provide the maximum possible safety operation in gas and dust laden areas, and are designated as Underwriters' Laboratories Type GS. The protection includes shielding the electrical

equipment against sparking, providing a water-type exhaust manifold and a water-cooled muffler, and using static conductive tires. Trucks so equipped will not readily be a source of ignition of any vapor because of electrical sparks, hot metal surfaces, exhaust gases, or backfires.

The fuel tank is of heavy welded steel, surrounded by strong structural members as protection against rupture. A special filler cap which seals automatically is shielded from the engine compartment so overflow can't drop on electrical system of hot engine parts. An up-draft carburetor with a leak-tight metal air horn is connected directly to an air cleaner of the back-fire arrestor type. The exhaust manifold has a water jacket designed to keep exhaust system and engine surface temperatures low. The muffler is a water type which quenches sparks in the exhaust by directing them against a water spray. All low tension wires and cables are enclosed in flexible non-metallic tubing with metal enclosures to receive wires and terminal connections. All wires and cables are securely held to prevent chafing due to vibration and are located with safe clearances. All high tension wires are enclosed in flexible metal tubing that is grounded wherever wires pass through metal surfaces.

The battery terminals are protected by an insulated cover to prevent a short due to contact of metal tool or upsetting of the battery. The instrument panel, including the starter button, is enclosed. Horn is a standard spark protected electric horn. For full details, use the coupon.

FRICTION NOISE LOCATER

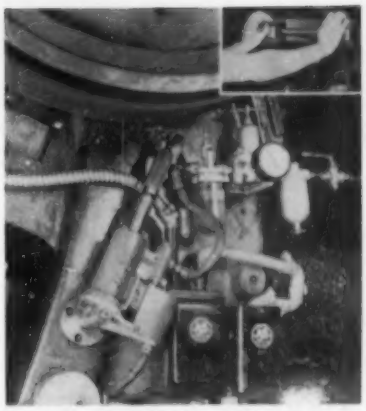
THE problem of locating friction noises in bearings, pistons, gears, ratchets, cams, clutches, traps, pipe lines, valves and other mechanisms is answered by a new, portable electronic instrument, according to Anco Instrument Division of Chicago, the manufacturers.

Known as the Elec-Detec, this electronic stethoscope employs a metal probe which serves as a microphone transmitting impulses electrically to headphones. It localizes the source of tell-tale noise, helps diagnose the trouble and determine quickly where to make repairs without tearing down the entire equipment, it is stated. The electric amplifier and the sensitivity control make it possible to detect sounds at low speed that otherwise could be heard only at high speeds. Even the tick of a fine watch and sounds that are not normally audible are clearly defined through this instrument, it is said, while air-borne sounds do not register. Elec-Detec is furnished complete with high impedance type headphones, batteries, and leather carrying case. Further details can be obtained by sending in the coupon.

PUNCH PRESS CONTROL

PUNCH Press Guard Model #AE 60 is particularly designed for direct clutch presses having not more than 60 lbs. pull and 2" of up-and-down movement on the clutch tripping rod. It is also adaptable to spot welders, brakes and shears. Made by Tech-N-Kal Machine & Engineering of Michigan, the unit is electric-pneumatic operated. Present foot treadle is replaced by an Air Clutch operator; a set of electric start buttons for each operator is installed in a convenient place on the press, the buttons are located far enough apart so that operator must use one hand on each button. Only by simultaneously pushing both buttons is the circuit completed; then the Air Clutch operator engages the clutch allowing the ram to make one complete revolution. Both hands are out of the danger zone as ram descends, but are ready to pick up the next piece of work. The foot treadle can be either temporarily disconnected or permanently removed if desired.

An Anti-Repeat Switch and Long Cam will allow the ram to descend only once, unless the Solenoid valve is re-energized by use of the two start buttons. A foot attachment for handling of long stock may be furnished. Plugging it into the press for blanking purposes gives an automatic operation to the press, making start buttons inactive. A Limit Switch can be installed in the circuit on interlocking dies so that the press cannot be operated unless the die or work is in the home position. Then only can the press be operated with the start buttons, eliminating possible major damage to the press or dies.



Model #AE 60 is a *complete package unit*, designed so that any shop electrician or maintenance man can install it. This unit consists of: Air Clutch Operator, Anti-Repeat Switch, Long Cam, 2 Start Buttons, Mounting Bracket, Blank Connector, Lubro-Control unit and *safe* proven Wiring Diagram. For details, use the coupon.

LINEMEN'S TAGGING DEVICE

TO PREVENT the premature closing of electrical circuits by attaching warning tags to disconnect switches, the W. H. Salisbury Co., of Illinois, is marketing the Marshal Tagging Device which assures positive, safe and simplified attachment of tags, even in difficult and inaccessible locations.

The device is a voltage-resisting rubber cap that fits securely over the head end of all standard switch poles. The cap has a rubber-covered wire hook to engage the eye of the switch blade and a molded button that will hold up to five warning tags. Until the device is removed by the authorized people, it will, with its accompanying tag or tags, prevent the closing of the switch by other persons. Linemen, electricians, safety directors and plant maintenance men may obtain full details by sending in the coupon.

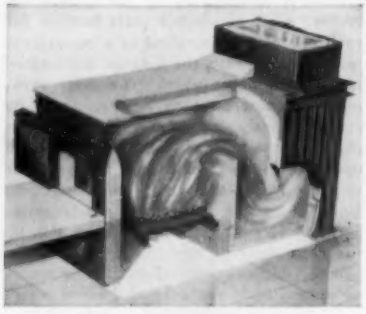
BURN SPRAY

A QUICK, new, easy-to-apply relief for burns, sunburn, itching eczemas, and wounds is provided with the new AMERICAINE Aerosol, automatic spray topical anesthetic. Because of its ease of application—just point the nozzle at the surface to be treated and press the button—the new AMERICAINE Aerosol should find wide use in first aid rooms, dispensaries, and first aid field kits. Medical tests have shown that relief is fast and sustained—providing relief in as little as 2 to 3 minutes, and affording prolonged relief up to 5 to 6 hours. Further medical tests show that AMERICAINE is a safe topical anesthetic. The liquid contains 20% dissolved benzocaine, plus an antiseptic agent, oxyquinoline benzoate, to help prevent infection, in a bland, water soluble base. Each spray dispenser contains 4 ounces of AMERICAINE Liquid and 7 ounces of inert propellent. For details, send in the coupon.

PORTABLE OXYGEN UNIT

A PORTABLE model of the M-S-A Oxygen Therapy Unit has been introduced by Mine Safety Appliances Company. Recommended for oxygen therapy work in industrial and fire fighting emergencies, this portable unit furnishes a flow of oxygen on inhalation, satisfying automatically any breathing demand of the wearer. Capable of supplying oxygen needs for approximately 90 minutes, this new instrument is mounted on a lightweight metal frame with a clamp and leather handle for ease in handling. The complete unit consists of a half-mask facepiece, pressure regulating assembly, flexible breathing hose and a 40 cubic foot capacity oxygen cylinder.

According to the manufacturer, the Portable Oxygen Therapy Unit is particularly suited for treatment in cases of cardiac emergencies, gas, smoke and carbon monoxide inhalation. For details, send in the coupon.

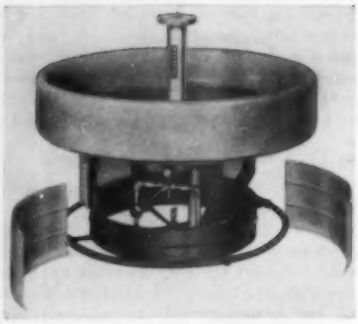


RUBBISH INCINERATOR

THE Plibrico Jointless Firebrick Co. of Illinois, announces the complete redesigning of their Standard Rubbish Destructor with Multi-Rib steel casing. This type of steel casing is so inherently strong that it reduces the weight of the steel casing and structural framing, permitting the erection of a steel-cased incinerator at a cost no greater than ordinary solid brick construction. All of the advantages of steel-cased construction are retained, such as cleanliness, compactness, durability, and minimum maintenance.

The Standard Rubbish Destructor is now erected with air-cooled Multi-Rib stack. Brick stacks on outdoor incinerators are subject to excessive deterioration from thermal shock, especially in cold climates and wet weather, but the air-cooled steel stack requires only an occasional coat of paint to remain in good condition.

This incinerator is lined with Plicast castable refractory material and is adequately insulated to protect the steelwork and paint. Designed to consume industrial and institutional waste, such as waste paper, cartons, floor sweepings, wood scrap, etc., the incinerator is erected in four standard sizes rated at 500, 1200, 2200, and 3500 lbs. per hr. For details, use the coupon.



NEW WASHFOUNTAINS

THE Bradley Washfountain Co., of Wisconsin, announces that all Bradley precast marble and stone Washfountains now are available with metal pedestals.

Because of their lighter weight the new pedestals afford an appreciable saving in freight costs and also are much easier to handle on the job.

Convenience of installation and later maintenance are enhanced by the fact that the panels of the pedestals are easily removable, thus providing ready access to mechanism within.

In addition metal pedestals give the fountains a new streamlined appearance and because they are entirely demountable make it possible to pack and ship a complete Washfountain in a single crate. For details, send the coupon.

CHISEL GRIP TOOL

THE safety committee of any organization can find many applications for a safety Chisel Grip developed by the Rose Manufacturing Company, of Colorado. The grip is designed particularly for holding chisels of various sizes. Where chisels are hand-held, any slip by chisel point or hammer head often means bruised fingers or even badly mangled hands. The new Chisel Grip is fully adjustable and is made in two sizes to take the vast majority of chisels, punches, gouges, marking dies, star drills, test tubes and the like. The chisel or other object is clamped firmly in a shock absorbing band so that little or none of the driving impact is transferred to the hand. The light-weight metal hand piece allows a full hand grip and keeps fingers out of harm's way. For speed in handling, the only adjustment is the large wing nut at the end of the hand grip. The gripping band is a long wearing, shock absorbing woven fibre. The tool is designed for maximum visibility of working area. Further details may be had by sending in the coupon.

February, 1952

To Safety Maintenance & Production

75 Fulton St., New York 38, N. Y.

For prices and complete details of items mentioned in this month's "What's New in Safety Products," check items that interest you and mail coupon.

- ☐ Silicone Water-Repellent
- ☐ Bomb Windows
- ☐ Anti-Rust Primer
- ☐ Radiated Heat Safety Glove
- ☐ Portable Fire Fighting Unit
- ☐ "Swing" Scaffold
- ☐ Combination Floor Machine
- ☐ Spark-Enclosed Gasoline Truck
- ☐ Friction Noise Locater
- ☐ Punch Press Control
- ☐ Linemen's Tagging Device
- ☐ Burn Spray
- ☐ Portable Oxygen Unit
- ☐ Rubbish Incinerator
- ☐ New Washfountains
- ☐ Chisel Grip Tool

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City .....

Tokheim Elects

MR. E. S. HIGGINBOTHAM of Ft. Wayne, Ind., was elected chairman, board of directors, of the Tokheim Oil Tank and Pump Company, at a special meeting of the board of directors. The new board chairman, who will also continue as president of the company, succeeds Chester C. Oberly, deceased.

Mr. Higginbotham has been associated with the Tokheim organization since 1938. He joined the company as assistant district manager of the New York sales office. Subsequently, he served as district manager, vice president and sales manager, executive vice president, vice president and general manager, and president. He has held the office of president since April 27, 1946, and has been a director of the company since 1941.

Davis Co. Appoints

THE New Year began at the Davis Emergency Equipment Company of Newark, N. J., with the elevation of two widely known personalities in the safety equipment field to the positions of president and vice president.

The new Davis Equipment president is Frank R. Davis, Jr., who started in the shipping department 19 years ago on a tour of duty which took him through all the various departments of the company, including the stock room, factory, office and sales. He went to the Chicago office in 1937 and was placed in charge of the San Francisco office in 1942, a year which brought him back to the home office in Newark as manager of Industrial Safety Equipment Division sales. He became general manager of the division in 1948, and vice president in 1949. As president, he succeeds his father, Frank R. Davis, Sr., who founded the company in 1921.

Starting the New Year as the vice president and in charge of the Instrument Division is Fielding Taylor, Jr., who came to the company in 1941 to direct manufacturing, and had the responsibility of setting up production in the company's new plant. He replaced the younger Davis in the San Francisco office in 1942, and in 1948 became general manager of the company's Instrument Division.

The elder Davis continues active in company management as chairman of the board. Continuing as treasurer is a 25-year veteran, Thomas A. Woolsey.

6th Annual Industrial Electrical Show

"PLANNED Productive Maintenance" is the theme of the Sixth Annual Industrial Electrical Show and first Technical Conference to be sponsored by the Electrical Maintenance Engineers Association of Southern California on March 20, 21, 22, 1952 at the new Veterans' Memorial Building in Culver City, Calif. The show is sponsored each year by EMEA as a service to buyers and sellers of industrial electrical equipment. The technical conference is a new addition to the show. Prominent leaders in industry will participate in presentations on "Planned Lighting Maintenance," "Planned Equipment Maintenance" and "Planned Plant Electrical Distribution Maintenance."

Richard Rogers, Ace Day & Night Electric Co., Los Angeles is director of the 1952 event.

Feedrail Appoints

IN THE interest of expanding and bettering the engineering and sales service, Mr. F. L. Novak, President of the Feedrail Corporation, of New York, has announced the following appointments: R. E. Nugent, Chief Engineer; W. R. Jewett, Assistant Chief Engineer; W. J. Bulanchuk, Design Engineer; G. H. Baumann, Sales Manager. The Feedrail Corporation manufactures and markets trolley busway electric power distribution systems.

Tractor Safety Film

A DRAMATIC new motion picture on "Farm Tractor Safety" was given its premier showing in Chicago, when the American Petroleum Institute held its 31st Annual Meeting. Produced for the API Committee on Agriculture, the motion picture was shown at a group agriculture session. Many agricultural leaders from Chicago and the Midwest were on hand as guests for the premier.

The 16-millimeter sound-color motion picture calls attention to the fact that 3 farm workers are killed and more than 150 are injured every day in tractor accidents. It emphasizes the point that no amount of engineering skill on the part of the manufacturer can offset or compensate for improper use of tractors.

"Farm Tractor Safety" graphically illustrates the "do's and don'ts" of good tractor operation.

Cooperating with the API Agriculture Committee in producing the motion picture were farm safety specialists in 14 states, the farm safety division of the National Safety Council, and implement manufacturers.

Appearing in many scenes is a novel model tractor developed by the Agricultural Engineering Department of the University of Wisconsin. The model is electrically powered and steered, and demonstrates the hazards of improper hitching, tilting, tipping, and the dangers of tractor travel on highways.

It is expected that prints of the new motion picture will be available for distribution later. Prints will be sold to oil companies and other interested purchasers, and will be made available on a loan basis to state agricultural colleges, vocational agricultural teachers, county agents, and farm organizations.

Inquiries on the motion picture should be directed to the attention of the Committee on Agriculture, American Petroleum Institute, 50 West 50th Street, New York 20, N. Y.

✓ check list

OF PRODUCTS ADVERTISED IN THIS ISSUE

For full details, without obligation, merely circle the code number, fill in your name and address, and mail to: Service Dept., SAFETY MAINTENANCE & PRODUCTION, 75 Fulton St., New York 38, N. Y.

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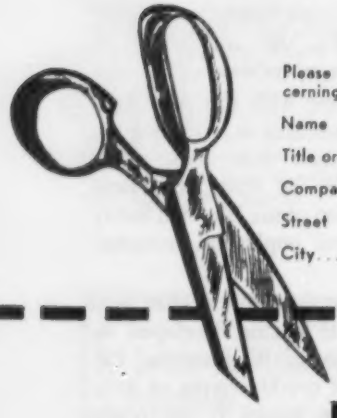

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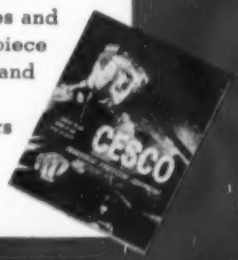

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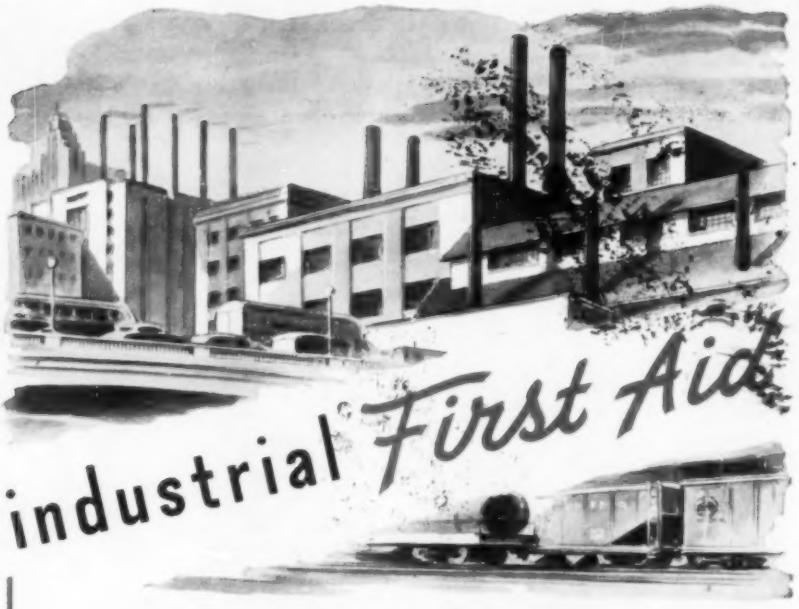

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